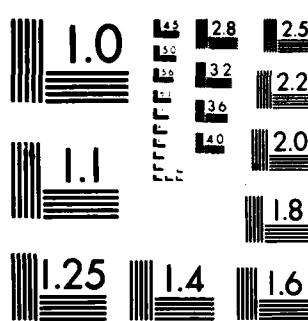


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AND ENVIRONMENTAL HEALTH LAB BROOKS AFB TX
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USAF OEH REPORT
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HANDBOOK OF VETERINARY CLAIMS
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This technical report has been reviewed and is approved for publication.

William E. Mabson
WILLIAM E. MABSON, Colonel, USAF, BSC
Commander

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USAF OCCUPATIONAL AND ENVIRONMENTAL

HEALTH LABORATORY

Brooks AFB, Texas 78235

HANDBOOK OF VETERINARY CLAIMS

MARCH 1983

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I. INTRODUCTION

Between 2 March 1968 and 30 November 1982, a total of 628 claims for damage to animals have been filed against the USAF with the face value totaling \$3,859,541.38. Of these, 580 claims with a face value of \$3,138,914.07 have been settled, but the actual amount paid was \$691,379.61, or about 22% of face value. This significant reduction in the amount paid for animal damage claims was primarily due to facts developed by the claims investigators. A significant, though unestimable, number of additional potential claims were never filed against the USAF because of facts that were developed in preliminary investigations.

The field investigation is the most important phase of the claims process, since every step in the adjudication of a claim and in the defense or prosecution of a lawsuit depends on the facts developed by the claims investigators. In the confusion following an airplane crash or other accidents, the loss of (or injury to) animals, fowl, fish, or wildlife may often be overlooked or underestimated. Unless those who investigate an accident are alerted to possible livestock damage, the damage may go unnoticed until it is too late to verify or discredit any resulting claims. Of course, certain types of damage can surface later rather than show immediate illness or injury.

Veterinarians, or other experts, as members of the investigation team, provide technical expertise, professional judgement and diplomatic advice, often under rather challenging circumstances. As experts in animal husbandry and/or medicine, their contributions to the investigation of claims against the Air Force involving damage to animals can be considerable because of their training in medicine, biology, animal husbandry and toxicology.

This manual serves as a guide for claims officers and appointed investigating veterinarians or other experts to process claims for damage to domestic animals, fowl, fish and wildlife. It explains the role of the USAF Occupational and Environmental Health Laboratory (USAF OEHL), Brooks AFB TX, as the point of contact by claims officers for the above claims. It also provides information on the disposition of previous claims. This manual is based on AFR 163-13¹ and AFM 112-1² which apply to USAF legal and veterinary personnel.

II. BACKGROUND

A. Definitions

A claim is any written or oral demand on the Air Force for monetary payment other than for obligations incurred in the regular procurement of services, supplies, equipment or real estate. Two types of claims include the noncombat and the federal tort. A noncombat claim is for damages caused by a uniquely Air Force activity, such as an aircraft disaster or a sonic boom. The amount of the claim determines the level at which adjudication is made. A federal tort is a claim for damages caused by a wrongful or negligent act of an Air Force member or a civilian employee while on duty. Types of incidents which have resulted in claims for animal damage to be filed include: (1) noise from low-flying aircraft, (2) sonic booms, (3) aircraft/missile accidents, (4) fuel dumping, (5) chaff dispersal for radar jamming and (6) dumping of toxic wastes into waterways.

B. How a claim is filed

Claimants may be the owners (or their agents or survivors) of the property damaged or the injured persons, their duly authorized agents or legal representatives. The claim is normally presented to the base commander of the Air Force installation involved. The base Claims Officer gives assistance to the claimant in filing the claim, investigates and processes the claim and maintains liaison with the claimants and other government or appointed investigative personnel. If there is any possibility of livestock or wildlife damage in connection with a claim, the USAF OEHL veterinary staff will be contacted at once for advice. The veterinary staff must advise whether a veterinarian (military, other governmental or civilian), or other experts, should be appointed as members of the investigating team. They must also advise what type of veterinary or other investigative procedures should be used.

III. DISCUSSION

A. Role of the veterinarian and/or other experts as team members

The function of the veterinarian and/or other experts is to assist the claims officer in investigation of claims involving damage to animals. They should use this handbook and confer with the USAF OEHL veterinary staff for guidance and consultation [AUTOVON 240-3667 or commercial (512) 536-3667]. The veterinarian and/or other experts will frequently be accompanied by the claims officer when conducting the investigation. They should make a complete investigation using all of their professional abilities to the best advantage. The investigation should include a thorough examination of all animals involved plus a complete background of management and husbandry practices and a detailed history of events prior to, during and after the claimed damage occurred. The failure to document a complete picture of the situation early in the investigation may prevent a timely, accurate, just and professional opinion being formed.

B. Investigation Guidelines

The veterinarian and/or other experts appointed or requested to investigate a claim are advised to proceed with caution in making oral or written statements concerning their findings. A common error often made by inexperienced investigators is expressing an on-the-spot opinion during an investigation. Such a statement could obligate or involve the Air Force, regardless of later findings. The investigator should remember: (1) Do not suggest or solicit any claims. Refer all inquiries to the Staff Judge Advocate. (2) Give no opinion until requested to do so by the proper Air Force authority. Make no statement that could, in any way, be construed as an Air Force commitment, position or policy. (3) Record all observations and information. Findings, regardless of their apparent insignificance at the time, must be a matter of record to substantiate or refute future claims. Do not overlook the value of photographs to document findings. (4) Develop and follow a standard operating procedure during investigation and reporting so that recordings are accurate, thorough and systematic. (5) Make no diagnosis not amply supported by both clinical and laboratory findings. (6) If possible, get opinions or statements from veterinary colleagues, extension veterinarians, county agricultural agents and others who have pertinent knowledge or

authority, including telephone or written consultations from the USAF OEHL veterinary staff. (7) If the possibility of disease is involved, advise the owner and suggest that the owner contact a private veterinarian; also, notify the state veterinarian. (8) Keep the base surgeon, base Commander, Staff Judge Advocate and USAF OEHL veterinary staff fully and promptly informed of all developments. When the veterinarian and/or other investigators have completed their investigation, they should submit a professional opinion to the base Staff Judge Advocate. Examples of professional opinions contained in this handbook (Appendices A through H) can be used as guides for the method of preparing the report.

C. Data Repository

A copy of the professional opinion should be immediately forwarded to the veterinary staff, USAF OEHL, Brooks AFB TX 78235, for inclusion in the data repository file. The information collected from investigating veterinarians or other experts, Staff Judge Advocates, and other sources is filed and monitored by the USAF OEHL veterinary staff.

The USAF OEHL staff also prepares an opinion summary on each claim following final litigation. These opinion summaries (Appendix I) are condensed case information compiled from members of the investigating team. The opinion summaries are maintained as part of the data repository.

The data repository also contains a current and extensive listing of literature reports on such topics as: The effects of aircraft noise and/or sonic booms on animals; animal toxicology; and animal husbandry.

This file is a reference service for all appointed investigating veterinarians, or other experts, to use in forming professional opinions on which to base recommendations to the Staff Judge Advocate.

IV. CONCLUSIONS

The field investigation is the most important phase of the claims process, since every step in the adjudication of a claim and in the defense or prosecution of a lawsuit depends on the facts developed by the claims investigators. If there is any possibility of livestock or wildlife damage in connection with a claim filed against the U.S. Air Force, the USAF OEHL veterinary staff will be contacted immediately for advice. They will advise what type of expert should be appointed as a member of the investigating team and what type of investigative procedures should be used. The appointed expert will assist the claims officer in investigation of the claim and will write a professional opinion, using this handbook as guidance. The USAF OEHL veterinary staff can be contacted at any time by letter, telephone [AUTOVON 240-3667 or commercial (512) 536-3667] or message for further guidance or advice. In addition, the literature reports, claims files and opinion summaries contained in the data repository, maintained by the USAF OEHL veterinary staff, are always available to the investigators for use in forming professional opinions on which to base recommendations to the Staff Judge Advocate. At the conclusion of an investigation, copies of the professional opinion and all associated documents should be forwarded to the USAF OEHL veterinary staff for inclusion in the data repository.

References

1. Air Force Regulation 163-13. Action on Claims for Damage to Domestic Animals, Fowl, Fish, and Wildlife. 28 September 1982.
2. Air Force Manual 112-1. Claims Manual. Paragraph 4-19, Claims Arising from Damage to Domestic Animals, Fowl, Fish, and Wildlife. 1 December 1972.

Appendix A

**Claim of Mary Groendyke
(Swine/Sonic Boom)**

16 JUN 1980

OPINION OF USAF DEHL STAFF VETERINARIAN

CLAIM OF: Mary Croendyke
Rt 1, Box 282A
Delano TN 37325

I, Joseph E. Milligan, Lt Col, USAF, Biomedical Sciences Corps, having been requested to express my professional opinion on this claim against the United States Air Force for alleged damage to domestic farm animals (swine) resulting from a sonic boom on 18 Dec 79 near Delano TN, herein present the following professional credentials:

I possess the following academic degrees:

Bachelor of Science--Agriculture--1963, Rutgers University
Master of Science--Animal Science--1975, Rutgers University
Doctor of Veterinary Medicine--1979, Cornell University
Doctor of Philosophy--Nutrition--1979, Rutgers University

My experience includes an extensive farming and animal husbandry background while growing up and living on a farm in New Jersey. I was active in the 4-H and Future Farmers of America organizations in my teenage years, raising, showing and judging various species of livestock, including swine. I received four years of extensive training in areas such as porcine science and swine management while enrolled in vocational agriculture in high school. I also studied swine diseases and swine pathology as part of the undergraduate animal science curriculum at Rutgers University. As a result of my advanced academic degrees, I have received extensive training in porcine management, nutrition, physiology, diseases, pathology and parasitology.

I have completed 16 years active duty with the United States Air Force. During this time, I have served both as a fighter pilot and a veterinarian. During the past year, I have been directly involved in numerous diverse and complex problems in the areas of environmental quality, occupational safety and health, and public health. I have also been involved in various ecological, toxicological and environmental health studies, and applied wildlife field investigations.

SIGNED

JOSEPH E. MILLIGAN, Lt Col, USAF, BSC
Chief, Environmental Toxicology Function

OPINION OF USAF CERL STAFF VETERINARIAN

I have reviewed the claim of Mary Groendyke, Rt 1, Box 282A, Belano TN 37325, which was sent to this office by the Staff Judge Advocate, Arnold Air Force Station TN, requesting a review and professional opinion of the facts presented. I herein present the following information, comments, recommendations and personal opinions relevant to this claim:

This claim poses a number of diverse questions which at this late date can only be addressed retrospectively using a combination of objective and subjective information. Although portions of the data are admittedly subjective, the reasoning used in preparing this opinion has been developed through 30 years of personal experience and professional training in the livestock industry as owner, manager, herdsman, student, nutritional consultant, veterinarian and now as an environmental specialist dealing daily with the effects of environmental pollutants, including noise and sonic booms, on animals of all species. Although the relative weight of the data used in the final determination may be open to honest differences of opinion, this recommendation is submitted as an impartial and unbiased statement, based on my best judgment of the evidence presented.

1. First there are certain data that are irrefutable. We know for instance, from the examining veterinarian's morbidity-mortality report that one sow died four days after the alleged incident and a calf died one week after the same incident. We also know from that same veterinary report that four sows had abnormal clinical signs including anorexia, cachexia, paresis, pyometritis and abortion. We have a wealth of information about the effects of noise and sonic booms on many animal species including man, domestic, wild and laboratory animals. We do know that a fighter aircraft was in the vicinity at the approximate time of the alleged incident. The crew members of that aircraft, however, report that they were flying at 1,000 ft at subsonic speeds. Furthermore, the HQ USAF Sonic Boom Repository has no record of activity that could be associated with the alleged incident.

2. Subjective data include information such as the examining veterinarian's report of irritability, hypernervousness and excitability among the swine. Also subjective, is his opinion that these animals have suffered accident neurosis resulting in a psychic and permanent mental disorder which would render them unfit for future breeding purposes. The level of apprehension produced in swine and cattle by aircraft flyovers and sonic booms cannot be totally predicted on an individual basis. In addition, the reports from the Sonic Boom Repository and the aircraft crew members do not preclude the possibility of an unreported sonic boom inadvertently created by an unwary crew.

A rapidly growing bibliography of recent studies has consistently minimized the effects of noise and vibration on the health and well-being of many animal species. A highly regarded Environmental Protection Agency report (1) includes an excellent bibliography of references on this subject as well as an objective review of known animal responses to noise and associated vibration. Virginia Polytechnic Institute (2), the Federal Aviation Administration (3) and the USAF Space and Missile System Organization (4) have surveyed the literature and reported the responses of a multitude of species of animals to sonic booms. In addition to these reviews, various agencies of the Department of Defense, the US Department of Agriculture and several universities have conducted studies on the effects of acute and chronic exposure to sonic booms and aircraft flyovers (5,6,7). Only a limited number of these reports

have been included in the reference list as examples. These particular studies were conducted specifically to provide valid data on the actual observed reactions of animals to noise and overpressure. Without exception, the studies have revealed little more than a transient "alert" reaction or startle response of animals when exposed to sudden noise of very high magnitudes.

In a study of cattle (6), pastured first in a quiet area and then very close to an active jet aircraft runway, there was no measurable difference in pounds of milk produced. This study is particularly significant since total milk production is considered a physiological mechanism highly sensitive to emotional and environmental stresses. In another study of swine (6), there was no apparent deleterious effect of simulated jet aircraft noise on swine. Direct visual observation and motion picture studies showed that the animals were aware of the noise or were startled at initial exposure to the sound but the behavior of the swine indicated a conditioning to the noise after short periods of time with no ill-effects. Reproduction studies indicated no effect of sound on copulation, conception, parturition, or lactation. Although the heart rate of the swine increased during the startle response, there was complete return to normal baseline recordings of the heart after exposure and no gross abnormalities in the heart tissue of these pigs were found at slaughter. Furthermore, macroscopic examination and histological studies of the middle ears and adrenal and thyroid glands of swine exposed daily to sound levels of 120-135 decibels (dB), failed to show that the organs had been affected by acoustical exposure. Thus, many of the widespread beliefs concerning harmful physiological and behavioral reactions of animals to sudden intense noise have been scientifically disproved.

If sonic booms did produce deleterious effects on animals, it would be the result of either: (1) the exposure of the body to the overpressure; and/or (2) the startle responses induced by the suddenness of the noise (9). Exposure to a single high density sound wave with an overpressure of 100,000 Newtons per square meter (N/m^2), for instance, can cause damage to the lungs. An overpressure of 35,000 N/m^2 may result in rupture of the eardrums. But these values are experimentally produced (9) and are far higher than the overpressures recorded for even the most intense sonic booms. Aircraft generated sonic booms occur in the range of 50-500 N/m^2 overpressure. Very occasionally, humans have been exposed to superbooms of about 500 N/m^2 , the maximum overpressure expected from aircraft sonic booms, without any deleterious effects at all.

It is much more likely, therefore, that sonic booms, if they are going to affect farm animals, will do so through the startle responses. The general level of reaction will probably vary, within a species, according to many factors, and it is difficult to predict the reaction of an animal to its first exposure to a sonic boom. However, based on the reviews and specific studies cited above, it appears that the startle responses of most farm livestock in general, and swine in particular, will be fairly mild and, that with experience, they will soon appear largely to disregard these types of stimuli. There have been no indications in the literature of economic loss of pigs due to sonic booms (9), such is the very mild reaction of this species to these stimuli.

There is, therefore, no reason to believe that the alleged damages to Mary Groendyke's animals are the direct result of a military jet breaking the sound barrier in the close proximity of her home and farm. Furthermore, the signs reported by the examining veterinarian are totally inconsistent with what I would expect in swine and cattle exposed to sonic booms. There are, however, many other extrinsic factors that could result in the nervous and/or reproductive problems reported in these animals. These factors include hog cholera, Teschen disease, brucellosis, pseudorabies, leptospirosis, bacterial toxemias, plant toxemias, chemical toxemias, various nutritional inadequacies and polioencephalomyelitis. It is inconceivable for abortion, in particular, to be caused in swine by exposure to sonic booms. The most likely causes of abortion in swine are brucellosis, leptospirosis and hog cholera. It should be pointed out that the combination of nervous and reproductive signs in the swine, along with the nervous signs and death of the calf, are most consistent with, and not unlike the signs sometimes seen in pseudorabies. The examining veterinarian's report does not include the above-mentioned differential diagnosis. A definitive diagnosis in this case is impossible without specific diagnostic clinical and laboratory tests. The examining veterinarian's medical evaluation of this case is also inadequate in this latter respect. It should be further noted that "abnormal" irritability, hypernervousness and excitability would be an extremely unusual medical diagnosis to make in any farm animal due to the highly subjective nature of such an observation. Any given animal may certainly be irritable, nervous or excitable compared to others of its species, but to say that animal is abnormally so, is impossible for anyone other than a frequent handler or observer of that animal. In conclusion, accident neurosis resulting in a psychic and permanent mental disorder, which would render an animal unfit for future breeding purposes, is not a recognizable syndrome in swine.

It is, therefore, my professional opinion that the claim of Mary Groendyke be disallowed in its entirety based on the following summary of the above-stated points:

1. Scientific documentation indicates that the only adverse reaction of cattle and swine to sonic booms is a temporary startle response.
2. Lack of proof that a startle response is associated with economic loss in swine.
3. Subjective nature and inadequacies of the examining veterinarian's report.
4. Strong possibility that the reported signs in these animals were caused by an undiagnosed herd health problem.

SIGNED

JOSEPH E. MILLIGAN, Lt Col, USAF, BSC
Chief, Environmental Toxicology Function

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9. Eubank, R. 1977. The effects of sonic booms on farm animals. Vet Annual 17: 296-306

Appendix B

**Claim of James and Barbara Huhmann
(Turkeys/Aircraft Noise)**

23 MAY 1980

OPINION OF USAF GEHL STAFF VETERINARIAN

CLAIM OF: James and Barbara Luhmann
P.O. Box 269
Tipton NO 65081

I, Joseph E. Milligan, Lt Col, USAF, Biomedical Sciences Corps, having been requested to express my professional opinion on this claim against the United States Air Force for death of turkeys, allegedly due to very low flying aircraft which caused them to pileup, herein present the following professional credentials:

I possess the following academic degrees:

Bachelor of Science - Agriculture - 1963, Rutgers University
Master of Science - Animal Science - 1975, Rutgers University
Doctor of Veterinary Medicine - 1979, Cornell University
Doctor of Philosophy - Nutrition - 1979, Rutgers University

My experience includes an extensive farming background gained while growing up and living on a farm in New Jersey. I worked on and managed a 2000-bird, on-the-floor, White Leghorn, layer operation for eight years. I also raised turkeys and ducks. I received four years of extensive training in poultry science and poultry management while enrolled in vocational agriculture in high school. I placed first in the New Jersey State FFA Poultry Judging Contest; third in the combined FFA and 4-H Eastern States Exposition Poultry Judging Contest; and, second in the National FFA Poultry Judging Contest. I also studied poultry diseases and poultry pathology as part of the undergraduate animal science curriculum at Rutgers University. As a result of my advanced academic degrees, I have received extensive training in poultry management, nutrition, physiology, diseases, pathology, and parasitology.

I have completed 16 years active duty with the United States Air Force. During this time, I have served both as a fighter pilot and a veterinarian. During the past year, I have been directly involved in numerous diverse and complex problems in the areas of environmental quality, occupational safety and health, and public health. I have been involved in various ecological, toxicological and environmental health studies, and applied wildlife field investigations. I have also written professional opinions on numerous livestock claims against the United States Air Force.

SIGNED

JOSEPH E. MILLIGAN, Lt Col, USAF, BSC
Chief, Environmental Toxicology Function

OPINION OF USAF OEHL STAFF VETERINARIAN

I have reviewed the claim of James and Barbara Huhmann, P.O. Box 269, Tipton MO 65081, at the 5 Sep 80 request of the claims officer, Whiteman Air Force Base MO. I have reviewed the 28 Jul 80 Memorandum for Record of Kirk R. Granier, Captain, USAF, Claims Officer, Whiteman AFB MO, and the 23 Jul 80 professional opinion of Howard L. Pue, Captain, USAF, BSC, Base Veterinarian, Whiteman AFB MO. I have reviewed the professional opinion and the 15 Sep 80 letter of Dr Stephen Byergo, Tipton Veterinary Clinic, Tipton MO. I have also reviewed the 15 Sep 80 professional opinion of Dr Emmett McCune, Avian Pathologist, and the 17 Sep 80 professional opinion of Dr Darrell Trampel, Avian Pathologist, Veterinary Medical Diagnostic Laboratory, University of Missouri, Columbia MO. I have, furthermore, reviewed numerous other supporting documents submitted with this claim. In addition, I have consulted with: Dr Art Bokford, Chairman, Department of Pathology, College of Veterinary Medicine, University of Missouri, Columbia MO; Dr Emmett McCune, Avian Pathologist, Veterinary Medical Diagnostic Laboratory, University of Missouri, Columbia MO; Dr Paul Sturkie, Avian Physiologist, Department of Environmental Physiology, Rutgers University, New Brunswick NJ; and Dr Bill Calley, Extension Poultry Specialist, Texas A&M University, College Station TX, in regards to this claim. Based on these consultations, and my practical experience and professional background, I herein present the following information, comments, recommendations, and personal opinions relevant to this claim:

1. There are certain irrefutable facts in this case:
 - a. The presence of low altitude aircraft flyovers.
 - b. High ambient temperatures.
 - c. High relative rates of humidity.
 - d. High absolute number of turkey deaths amounting to a high percent flock mortality.

The above facts are summarized in the following table:

<u>Date</u>	<u>Aircraft Flyovers (# of Sorties)</u>	<u>Ambient Temperature (°F)</u>	<u>% Humidity (Maximum)</u>	<u>Turkey Deaths</u>	<u>% Flock Mortality</u>
24 Jun 80	-	86	-	-	-
25 Jun 80	6	93	93	-	-
26 Jun 80	13	95	100	-	-
27 Jun 80	14	100	93	3924	11
28 Jun 80	-	94	85	1246	4
29 Jun 80	-	91	78	7964	23
30 Jun 80	-	94	83		
1 Jul 80	-	106	76	13,134	38%
2 Jul 80	-	36	-		
3 Jul 80	-	89	-		

Further facts regarding this case are continued as follows:

- e. No evidence of disease.
- f. Evidence of piling up preceding death.
- g. Surviving birds exhibited evidence of physical injuries.
- h. Turkey husbandry practices on this farm follow accepted industry standards.

2. With the above facts in mind, I will now address the specific questions, regarding this claim, raised by the 4 Sep 80 letter from the claims officer, Whiteman AFB MO:

- a. Are you familiar with any other turkey losses of this magnitude? If so, what was (were) the cause(s) of the loss(es)?

In turkey production, death loss caused by overcrowding or piling up as a result of a frightening or other stimulus does occur on occasion. Many different events such as inadequate shelter in cold or inclement weather, predatory animals, strange people, or seeing a new moon for the first time could cause turkeys to pileup, or frighten a flock causing them to stampede. Once frightened, the birds will pile up if an obstruction impedes their movement, resulting in suffocation or crushing of many individuals on the bottom. Large numbers of birds can be lost under such circumstances.

The most common frightening stimulus resulting in turkey pileups and subsequent deaths is noise. Animal reactions, in general, to subsonic aircraft overflights are similar to reactions to helicopters, barking dogs, blowing paper, truck backfires, thunder storms, or any other sudden noises. Avian species, in particular, may run, fly, or crowd. Most comparative accounts of the behavior shown by domesticated animals in response to aircraft noise (real or simulated) emphasize the pronounced reactions of poultry when contrasted with the farm mammals.

However, apart from a small number of disputed claims from hatcheries, there seem to be few suggestions of actual loss due to aircraft noise.

Field studies on a wide variety of birds have demonstrated few, if any, obvious long-lasting physiological effects from exposure to aircraft noise. However, it can be stated with reasonable certainty that there will be a startle effect. But, these reactions to aircraft noise are temporary and all birds soon return to normal activity. Experimentally, mild startle reactions can be provoked in poultry, but the birds soon adapt and there are no deaths or drops in production.

Experience shows an expected mortality rate in turkey flocks of 10-25% due to pileups caused by a frightening stimulus, and subsequent injuries. Tom turkeys at market weight would be expected to experience a percent mortality at the higher end of this range due to their weight- and hormone-related increased susceptibility to heart attacks.

The only other reasonable cause of such a high mortality rate in turkeys, as is seen in this claim, would be one of a number of infectious diseases, such as fowl cholera, erysipelas, or colibacillosis. Turkeys dying acutely from one of

these febrile diseases would, on necropsy, appear similar to and be indistinguishable from turkeys dying from heat stress. In both cases, the dead birds would show signs of dehydration, vascular engorgement, and "cooked" muscles. The significant difference between death due to an acute febrile illness and death due to externally stimulated heat stress would be a random mortality pattern with the former, and distinct piling up with the latter. The turkeys in this particular claim, however, showed no evidence of disease, did show evidence of piling up preceding death, and the surviving birds exhibited signs of physical injuries consistent with piling up in a stampede.

b. Do you have any data regarding the losses (either total head or percentage of a flock) experienced by Missouri turkey growers this summer due to the unusual severe heat or other causes?

Normal turkey mortality is about 1-2% per month in a growing flock. Tom turkey mortality would be closer to 2% per month due to increased susceptibility to heart attacks as previously mentioned. A normal total turkey mortality rate as high as 10% has been documented in some areas in turkeys that were raised from birth to market weight.

Turkey mortality rates as high as 10-12% have been seen in acute-onset heat waves. In gradually occurring heat waves, however, mortality rates are usually lower due to the birds' ability to physiologically adapt. The Missouri heat wave of late June to early July 1980 (when the incident reported in this claim occurred) was characterized by: gradual onset; and a 30°F temperature drop at night. These conditions allowed most birds to more readily adapt to and physiologically recover from the daily heat stress imposed on them.

The heat wave-related turkey mortality rate in northeastern Texas during this time period was about 3-4%, while Missouri turkey growers experienced about 2% losses from the heat. On another farm in the vicinity of this particular claim, the reported loss due to the heat wave was only 1200 out of 10,000 birds.

The excessive turkey mortality rate seen in this claim, therefore, seems to be too high to be a result of natural heat stress alone.

c. What is the likelihood that heat alone would have caused this many turkeys at two separate farms to stampede, pile and die?

Heat, alone, will not cause pileups in turkeys. The opposite extreme of cold temperatures in the absence of adequate shelter will cause pileups, as will previously mentioned frightening stimuli. Heat-related turkey deaths, due only to high ambient temperature, will occur in a random pattern similar to deaths from an acute febrile disease.

d. What likelihood is there that heat would have been a contributing factor?

High ambient temperatures are certainly a contributing factor in turkey losses due to piling up, whatever the cause of the latter. Whether subjected to naturally occurring heat stress, or the heat stress of piling up compounded by a heat wave, turkeys must physiologically respond in the same manner. Turkeys accomplish heat loss through convection and evaporative loss (panting). Due to heavy reliance on evaporative cooling, high humidity, as seen in this incident,

can further compound heat stress. For instance, during the June-July 1980 heat wave in Texas, northeastern Texas poultry raisers experienced a 50% broiler mortality due to high humidity, immediately following a heavy rainfall, in combination with the extreme temperature condition.

The important point to be made about deaths due to heat stress from piling up is the immediacy of the event. Turkey deaths following a frightening noise will be acute with no long-term effect normally seen in the survivors. The hyperactivity caused by the noise stress, when added to the heat stress of piling up, will cause the birds to pass out right away. The lethal body temperature in turkeys is 116°F. This temperature is very rapidly reached after piling up and death occurs due to cardiovascular collapse. A few birds might linger for a little over one hour during heat prostration, but most deaths will occur in less than one hour after the frightening stimulus. The fact that no long-term physiological effect results from heat stress due to piling up, alone, has been experimentally confirmed.

e. Is it reasonable to believe that turkeys would die in large numbers (8000 reported by one grower, 4000 by the other) from a "stress factor" three or more days after a stampede?

It is well known, that when confined birds are frightened and pileup, they will inflict nonfatal injuries (usually on the backs) on each other. These injuries will reduce feed and water intake for as long as 4-5 weeks, but, in the absence of a secondary bacterial infection, will not result in a significant mortality rate following the incident. Any deaths that do occur as a result of these injuries will occur within 72 hours of the incident. As was stated previously, the normally expected pileup mortality rate in turkeys would be 10-25%. This includes the small 72 hour post-incident injury-related deaths.

3. In conclusion, it can be stated with reasonable certainty that neither heat stress nor the stress of aircraft flyovers would, in themselves, cause:

a. The high mortality rate observed during the period of the aircraft flyovers in this claim.

b. The high mortality rate observed during the 72 hours following the last aircraft flyover.

However, based on all available information, the extensive mortality rate in the turkey flock in this claim is not unlike, and is consistent with, the expected accumulative effects of the two incidences together.

OPINION: It is my professional opinion that the turkey losses reported in this claim are the direct result of United States Air Force aircraft flyovers. This incident, although unfortunate in itself, is even more unfortunate in that it occurred during an intense heat wave accompanied by high humidity. The losses that were experienced, would have been much lower, if not for the existing climatic conditions. Furthermore, only minimal losses would have occurred during the 72 hour period following the last flyover, if not for the heat and humidity. Nonetheless, due to obvious USAF complicity in this case, I recommend that this claim be allowed in its entirety.

SIGNED

JOSEPH E. MILLIGAN, Lt Col, USAF, BSC
Chief, Environmental Toxicology Function

Appendix C

**Claim of James Alexander
(Mink/Aircraft Noise)**

OPINION OF USAF OEHL STAFF VETERINARIAN

30 MAR 1991

Claim of: James Alexander
3436 Maple Grove Road
Duluth MN 55811

I, Bruce W. Martin, Captain, USAFR, BSC, having been requested to review the claim of James Alexander against the U.S. Air Force, herein present the following information, comments, and recommendations relative to the claim.

I possess the following academic degrees:

Bachelor of Science—Agriculture—1975, Oklahoma State University
Doctor of Veterinary Medicine—1975—Oklahoma State University

I have completed three years of a four year program to receive a Doctor of Philosophy in Veterinary Toxicology from Texas A&M University. I am presently employed as a mobilization augmentee with the USAF OEHL at Brooks AFB TX.

My experience includes an extensive farming background gained while growing up and living on a farm in northwest Arkansas. I worked on an 18,000-bird, commercial broiler operation for four years. I received four years of extensive training in vocational agriculture while in high school. I actively participated in 4 H and FFA with beef and swine projects as well as livestock and crop judging. I also studied livestock husbandry, nutrition, and pathology, as part of the undergraduate animal science curriculum at the University of Arkansas and Oklahoma State University. As a result of my advanced academic degrees, I have received extensive training in livestock management, nutrition, physiology, diseases, pathology and parasitology.

BRUCE W. MARTIN, Captain, USAFR, BSC
Mobilization Augmentee

OPINION OF USAF OEHL STAFF VETERINARIAN

1. Having assessed the file regarding the claim of James Alexander for loss of his mink population the following professional opinion is presented.

2. There have been four (4) major projects conducted in the last 20 years to determine the effects of low flying aircraft noise and/or sonic booms on farm-raised mink. The following quotes from these works are presented as relevant to the present claim:

"When mink were boomed for the first time, a few of them responded by coming out of their nest boxes or moving around in the pen in a manner to convey interest in what caused the noise. There was no response at all in the majority of the animals. There was no racing up and down the pen or squealing that is usually indicative of a high state of agitation in mink. No abnormal behavior was observed throughout the experiment.

"Under the conditions of this study, no harmful effects to mink were observed that could be attributed to exposure to the simulated sonic booms. Reproduction in both the boomed and not boomed groups could be considered normal." (Reference 1)

"The mink farm in question may be regarded as very suitable for the purpose; in as much as the animals there cannot be thought to be habituated to flight noise. The farm is located in a deep and quite narrow glen for which reason there can normally be no question of low-altitude overflights.

"As a summation of the observations which were made during and after the overflights, it can be said that the engine noise did not give rise to any apparent agitation among the female mink, whether they were pregnant or had recently whelped. There did not occur any damage in the form of whelps bitten to death or abortion." (Reference 2)

"Mink were carefully observed at various stages of breeding - such as during precoital fighting and as mated pairs, as a sonic boom occurred. No pair was observed to change its pattern of courtship or terminate coitus due to a sonic boom.

"Female mink with young were observed while feeding, sleeping, or exercising in various parts of their cages and whelping boxes when a sonic boom occurred. In general, they stopped whatever activity they were doing at the passage of the shock wave. Some moved directly to their young, apparently checked their condition, and then returned to their previous activity. Several females that were asleep were not awakened by the shock wave, and those that did awaken usually made no effort to move about. No female was observed to become overly excited or frantic, and none was seen manifesting cannibalistic behavior." (Reference 3)

"The duration of the startle response of the two females recorded by closed-circuit TV suggested that the startle response of nursing female mink was extremely brief in duration and the mothers quickly returned to caring for their kits. No behavioral evidence was found which would suggest that the female mink under observation in this study were sufficiently disturbed by sonic booms to engage in kit packing, kit killing, or cease adequate lactation.

"The conclusion drawn from this study is that exposure of farm-raised mink to intense sonic booms during whelping season had no adverse effect on their reproduction or behavior." (Reference 4)

3. References number, 1 and 2 specifically point out that there were no special adverse reactions by the mink to first-time flyovers. Therefore, any claim due to non habituation appears unfounded. Reference 2 is also of special interest because in that study only jet engine noise was involved--not sonic booms. The point has been made, and well taken, by Dr Kull (Reference 2), that results from one farm may not be directly transferable to another. Differences in environment and management could result in different effects caused by aircraft noises. However, monitoring data involving several farms reflect, no documented adverse effects to mink can be directly attributed to aircraft flyovers.

4. An area that Mr Alexander left undocumented is the health of his animals at the time of his kit losses. No professional documentation is presented, for example, by a veterinarian or extension agent, which would confirm that the kits did not die of disease or as the result of feeding spoiled feed. He is also vague in his description of the losses making an analysis of the total situation difficult. There are no histopath reports of kit tissues or cultures, feed analysis, etc.

5. Based on the available literature concerning aircraft noise and mink, and the lack of documentation of animal health, and management practices, it is my opinion that Mr Alexander's losses cannot be attributed to flyovers by Air Force aircraft.

BRUCE W. MARTIN, Captain, USAFR, BSC
Mobilization Augmentee

1 Atch
References

REFERENCES

1. Travis, H.F. et al. The effects of simulated sonic booms on reproduction and behavior of farm-raised mink. U.S. Department of Agriculture/Agricultural Research Service (ARS 44-200) June 1968.
2. Kull, K.E. Damage due to panic on mink farms. Vora Poolsdjur (Our Fur-Bearing Animals) 34:107 (1962).
3. Heinemann, J.M. Effects of sonic booms on the hatchability of chicken eggs, and other studies of aircraft-generated noise effects on animals. Paper presented at the Symposium on Extra-Auditory Effects of Audible Sound, Annual Meeting of AAAS, Boston, Ma. December 29, 1969
4. Travis, H.F. et al. An interdisciplinary study of the effects of actual (real) and simulated sonic booms on farm-raised mink (Mustella vison). Technical Report EHL(K) 72-11 USAF Environmental Health Laboratory, Kelly AFB, Texas (1972).

Appendix D

**Claim of Max Wertheim
(Cattle/Aircraft Noise)**

OPINION OF USAF OEHL STAFF VETERINARIAN

Claim of: Max Wertheim
P.O. Box 22
Ft Sumner NM 88119

30 MAY 1980

I, Bruce W. Martin, Capt, USAFR, BSC, having been requested to review the claim of Max Wertheim against the US Air Force, herein present the following information, comments, and recommendations relative to the claim.

I possess the following academic degrees:

Bachelor of Science--Agriculture--1975, Oklahoma State U.
Doctor of Veterinary Medicine--1975--Oklahoma State U.

I have completed 2 years of a 4 year program to receive a Doctor of Philosophy in Veterinary Toxicology from Texas A&M University. I am presently employed as a three quarter time assistant instructor at Texas A&M University and serve as a mobilization augmentee with the USAF OEHL at Brooks AFB TX.

My experience includes an extensive farming background gained while growing up and living on a farm in northwest Arkansas. I worked on an 18,000-bird, commercial broiler operation for 4 years. I received 4 years of extensive training in vocational agriculture while in high school. I actively participated in 4-H and FFA with beef and swine projects as well as livestock and crop judging. I also studied livestock husbandry nutrition, and pathology as part of the undergraduate animal science curriculum at the University of Arkansas and Oklahoma State University. As a result of my advanced academic degrees I have received extensive training in livestock management, nutrition, physiology, diseases, pathology and parasitology.

SIGNED

BRUCE W. MARTIN, Capt, USAFR, BSC
Mobilization Augmentee

OPINION OF USAF GEHL STAFF VETERINARIAN

1. It is my opinion that the claim of Max Wertheim may be well founded. He states that low flying military aircraft frightened his cattle, leading to the injury and eventual death of three head. It is well established that cattle unaccustomed to aircraft exhibit a "startle response" and may run to avoid the noise. The injuries that are claimed are consistent with the case presented.
2. It is noted that the claimants corrals are located directly in the path of high speed low altitude aircraft fly overs. Since it might be anticipated that claims of this type could be submitted again in the future, I suggest that a veterinarian be consulted to examine the calves when this occurs. His professional opinion on the cause of death may prevent the Air Force paying for animals dying due to shipping stress or other causes.
3. Based on the facts as presented in this case I recommend that the claimant be compensated for the loss of the three head of cattle at a fair market price.

SIGNED

BRUCE W. MARTIN, Capt, USAFR, BSC
Mobilization Augmentee

Appendix E

**Claim of Gerald Lee
(Chickens/Aircraft Noise)**

04 JAN 1980

OPINION OF USAF OEHL STAFF VETERINARIAN

CLAIM OF: Mr Gerald Lee
P. O. Box 47
Montello, Nevada 89830

I, Joseph E. Milligan, Major, USAF, Veterinary Corps, having been requested to review Captain Kristin L. Schmitz' professional Opinion on this claim against the United States Air Force, herein present the following information, comments, and recommendations relative to Captain Schmitz' Opinion and Mr Lee's claim.

I possess the following academic degrees:

Bachelor of Science - Agriculture - 1963, Rutgers University
Master of Science - Animal Science - 1975, Rutgers University
Doctor of Veterinary Medicine - 1979, Cornell University
Doctor of Philosophy - Nutrition - 1979, Rutgers University

My experience includes an extensive farming background gained while growing up and living on a farm in New Jersey. I worked on and managed a 2000-bird, on-the-floor, White Leghorn, layer operation for eight years. This operation was similar in size and design to that of Mr Gerald Lee. I received four years of extensive training in poultry science and poultry management while enrolled in vocational agriculture in high school. I placed first in the New Jersey State FFA Poultry Judging Contest; third in the combined FFA and 4-H Eastern States Exposition Poultry Judging Contest; and, second in the National FFA Poultry Judging Contest. I also studied poultry diseases and poultry pathology as part of the undergraduate animal science curriculum at Rutgers University. As a result of my advanced academic degrees, I have received extensive training in poultry management, nutrition, physiology, diseases, pathology, and parasitology.

SIGNED

JOSEPH E. MILLIGAN, Major, USAF, VC
Consultant, Environmental Physiology

04 JAN 1980

OPINION OF USAF OEHL STAFF VETERINARIAN

Having reviewed the Opinion of Captain Kristin L. Schmitz in response to the claim of Mr Gerald Lee, I must comment that the Opinion was expertly presented and professionally correct in every detail. I concur in Captain Schmitz' Opinion in its entirety. Due to the completeness of Captain Schmitz' investigation and Opinion, any detailed comment that I might make would be repetitious. I will, therefore, limit my professional opinion to a summary of the important points in this case, and to a few additional comments that will substantiate the professional judgment made by Captain Schmitz in this case.

Based on my practical experience and professional background, I submit the following summary of points which I consider to be most relevant in this case:

1. Maximum egg production by White Leghorn hens requires a combination of optimum nutrition, age, lighting, water, temperature, housing, and health.
2. The use of artificial lighting is accepted as an essential factor for maximizing egg production. Potential egg production can be reduced by more than 20 percent without the use of artificial lighting. Mr Lee used no such lighting.
3. White Leghorn hens produce eggs efficiently for 10 to 14 months before exhibiting a natural sporadic moulting behavior. Forced moulting at this time is essential in maximizing production during the second laying term. Without forced moulting, a 50 percent cull rate can be expected, with a maximum of 80 percent production from the remaining birds. This equates to 40 percent maximum production during the second laying term of an unculled flock. Mr Lee neither force moults nor culls the hens in his flock. Most of Mr Lee's hens were obtained well past the end of their first laying term.
4. Even with forced moulting and drastic culling, two laying terms is the maximum economical and practical length of time to retain any bird in a laying flock. All of the birds in Mr Lee's flock are at the end of their useful productive life.
5. There are no indications that Mr Lee's flock has experienced any serious disease condition which would result in decreased egg production.
6. Inadequate floor space, nesting boxes, feeder space, and water troughs are all factors which can create an environmental stress on laying hens, and have an accumulative effect of reducing egg production. Furthermore, infrequent coop cleaning and lack of litter result in a high ammonia concentration in the air at the breathing zone level of the hens, creating a respiratory stress, if not distress. This also reduces production. Mr Lee appears to be guilty of all of these mismanagement factors.

04 JAN 1980

7. Introducing new birds into common pens with an established flock is not recommended since a new pecking order must be established. The result is undue stress caused by fighting and infrequent feeding, often leading to sporadic moulting and always leading to reduced egg production. From the charts supplied by Captain Schmitz, there appears to be a direct correlation between decreased egg production in Mr Lee's flock with the introduction of new birds.

8. The most important point to be mentioned in this case is one of nutritional management. Mr Lee fed two different rations to his flock, a 16 percent commercial laying mash and a home-ground mix. Commercial laying rations are formulated to exceed National Research Council (NRC) recommendations for nutrient requirements of mature laying hens of the White Leghorn type. Since Mr Lee formulated his own rations for approximately one year, and no analysis of that ration was completed, the following is offered in an attempt to determine the nutritional adequacy of that ration for a mature laying White Leghorn hen. The home-ground mixture consisted of 300 pounds of 38 percent lay concentrate (17.24%); 200 pounds of whole wheat (11.49%); 800 pounds of whole corn (45.98%); 300 pounds of oats (17.24%); 100 pounds of calcite (5.75%); 30 pounds of salt (1.72%); and, ten pounds of aureomycin crumbles (0.58%). Mr Lee fed 160-200 pounds (72.96 - 91.20 kg) of this ration per day to 1020-1173 laying hens during the one-year time period of May 1978 to May 1979. That computes as a maximum of 89 grams of feed per hen per day, or,

$$\frac{91.20 \text{ kg/day}}{1020 \text{ hens}} = .089 \text{ kg (89 g)/hen/day}$$

Table 1 compares the NRC requirements to Mr Lee's home-ground mixture of feed for laying hens. The NRC requirements are those established for an average, 1800 gram, mature laying hen at 65 percent production and 21.1°C (70°F). The amounts of nutrients supplied by corn, oats, wheat, and calcite were computed, based on data listed in the Atlas of Nutritional Data on United States and Canadian Feeds, National Academy of Sciences, Washington, D. C., 1971. These data have been reviewed and approved as being professionally correct, and representative for these feedstuffs. The amounts of nutrients supplied by the 38 percent protein lay concentrate are the average of three of the most commonly used concentrate ingredients (corn gluten meal, soybean oil meal, cottonseed oil meal), and were also extracted from the aforementioned Atlas. It is obvious from Table 1 that Mr Lee's home-ground ration, as fed, was deficient for egg production in total feed supplied, crude protein, methionine, total S-amino acids, lysine, calcium, phosphorus, and riboflavin. All other nutrients were adequate for egg production and, therefore, are not listed in the Table. The nutrients supplied, however, were all adequate for maintenance of a mature hen. The calcium deficiency, however, was undoubtedly overcome by ad libitum oyster shell (CaCO₃) supplementation. The other nutrients listed were not sufficient to support egg production in a mature laying hen, particularly total protein and specific essential amino acids.

04 JAN 1980

It is of fundamental importance, when considering poultry rations, that chickens eat only to satisfy their energy requirements. Therefore, as energy requirements decrease due to increased environmental temperature, etc., percent protein in the diet must be increased in order to maintain production. A 1.2 percent decrease in feed consumption is expected per 1°F increase in environmental temperature above 70°F. High environmental temperatures would, therefore, further aggravate the protein inadequacy experienced by Mr Lee's flock. In this respect, even a 16 percent protein commercial laying ration would not supply sufficient protein to support maximum egg production at environmental temperatures above 75.6°F.

Also of fundamental importance, when considering poultry rations, is the response of a laying hen to protein inadequacy. When a laying hen is fed inadequate diet protein, she is in a negative nitrogen balance and must draw upon and deplete body nitrogen reserves to maintain production. The result is an abrupt cessation of egg production when these reserves are depleted. With cessation of egg production, the hen is suddenly in a positive nitrogen balance, assuming the diet protein level is adequate for maintenance. The hen will, therefore, gradually replenish her body nitrogen reserves, recommence egg production, and the cycle repeats itself. This fluctuating production cycle is typified on the chart of "monthly percent production" for Mr Lee's flock between May 1978 and May 1979. This is the time period that Mr Lee fed the home-ground ration which has been shown to be inadequate in protein for maintenance of egg production.

OPINION: It is my professional opinion that the poor production record of Mr Gerald Lee's laying flock is expected, and totally explainable by age, environmental factors, and nutritional inadequacy. This poor production record would have existed with or without low level aircraft overflights. Therefore, the United States Air Force cannot be held accountable for the poor production record of Mr Lee's flock. The claim of Mr Gerald Lee should be disallowed in its entirety.

SIGNED

JOSEPH E. MILLIGAN, Major, USAF, VC
Consultant, Environmental Physiology

1 Atch
Table 1

TABLE 1. NATIONAL RESEARCH COUNCIL REQUIREMENTS COMPARED TO A HOME-GROUND MIXTURE OF FEED FOR LAYING HENS

Nutrient	NRC Requirement	Amounts Supplied by Mr. Lee's Home-Ground Mix						Aureo- mycin Total
		Corn	Oats	Wheat	Conc.	Calcite	Salt	
Total feed	110 g	40.92	15.34	10.23	15.34	5.12	1.54	0.51
Crude Protein	16.5 g	3.6	1.3	1.2	5.8	-0-	-0-	11.9 g
Methionine	.30 g	.07	.02	-0-	.11	-0-	-0-	.20 g
Total S-amino acids	.55 g	.11	.04	.03	.18	-0-	-0-	.36 g
Lysine	.66 g	.11	.06	.04	.27	-0-	-0-	.48 g
Calcium	3.60 g	.008	.012	.008	.029	1.79	-0-	1.85 g
Phosphorus	.55 g	.12	.04	.04	.12	.0005	-0-	.32 g
Riboflavin	.24 mg/kg	.04	.02	.01	.05	-0-	-0-	.12 mg/kg

04 JAN 1980

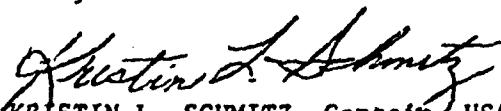
Professional Opinion in Response to
Claim of: Mr. Gerald Lee
P. O. Box 47
Montello, Nevada 89830

PREFACE

I, Kristin L. Schmitz, Captain, Veterinary Corps, United States Air Force, having been requested to express my comments and opinion on the above claim against the United States Air Force, herein present the following information, comments, and recommendations relative to the above claim.

I possess a Doctor of Veterinary Medicine degree from the University of Georgia (1975). I am presently serving as the Base Veterinarian at Mountain Home Air Force Base in Idaho. I have held this position for approximately one year.

My experience includes a small farm background acquired while growing up in a rural community near Mebane, North Carolina. As a teenager, I was responsible for managing a small flock of layers (i.e., ten White Leghorns) maintained for home use. During my high school years, I was an active member of the 4-H Club at local, county, and state levels. My educational background includes courses in poultry science and poultry management at North Carolina State University. I also studied poultry diseases, pathology, and parasitology as part of the veterinary curriculum at the University of Georgia. Prior to entering the Air Force, I engaged in private practice for three years. I have been on active duty with the United States Air Force for approximately one year.


KRISTIN L. SCHMITZ, Captain, USAF, VC
Base Veterinarian

Professional Opinion in Response to
Claim of: Mr. Gerald Lee
P. O. Box 47
Montello, Nevada 89830

1. Mr. Gerald Lee of Montello, Nevada has filed a claim against the United States Air Force in the amount of \$60,000 for alleged decreases in egg production in his laying flock caused by low flying aircraft. According to Mr. Lee:

Jets flew over home and chicken coops causing chickens to become flighty because of broken eardrums, also of fear. This has resulted in loss of egg production, hampering our business and livelihood.

In the claim, Mr. Lee cites seven incidents of low flying aircraft occurring on 14 and 15 March 1979. Although these were the only recorded incidents, Mr. Lee states that the aircraft have been flying over his farm since the spring of 1978. According to Mr. Lee, he was selling about two and one-half cases of eggs (i.e., 75 dozen) each day before the incidents began. He claims that his production has declined to about six dozen a day and he has been forced to buy eggs from an egg wholesaler to meet customer demands. Mr. Lee has filed the claim for the years 1978-1982 (i.e., the alleged productive life of the present laying flock).

2. At the time of this report, the aircraft have not been positively identified. Witnesses for Mr. Lee described the aircraft as camouflaged but were unable to remember any identifying characteristics. The aircraft were tentatively identified as belonging to the Air National Guard flying out of Hill Air Force Base in Utah. The Air National Guard, however, denies that any of their aircraft have come any closer than three miles to Montello and no lower than 3000 feet within the past eight months. Aircraft from Mountain Home AFB, Nellis AFB, and Hill AFB reportedly do not fly missions in this area either. Although the United States Navy and the Marines do fly missions in this general area, they have no record of aircraft being in the area on the dates and times in question.

3. On 23 and 24 May 1979, I, Captain Kristin L. Schmitz, Base Veterinarian at Mountain Home AFB, together with Captain Brad DeAustin, Assistant Staff Judge Advocate and Claims Officer from Mountain Home AFB, visited the Lee residence in Montello, Nevada. During the two day period, the poultry operation was studied closely and photographed. The history and available data about the operation were obtained through conversations with Mr. Lee and through careful examination of his daughter's records. The following observations of the operation were made at that time:

a. Housing: The birds were housed in four adjoining coops with three attached pens. The two middle coops shared a single pen. The coops were constructed of untreated wood with tin roofing. The sides and backs of the coops were insulated with feedbags and polyethylene. There was no roofing insulation. The floors were dirt and there was no litter present. Each coop had one doorway (no door) which reportedly remains open in the summer and is partially closed by burlap in the winter. The first coop had two windows; the others each had one. All windows were located on the front side of the coops. Each coop had one 40 watt bulb. There were fifteen individual nests in the first coop; fifteen in the second; eight in the third; and nine in the fourth. The surrounding pens were open on top and enclosed on the sides by chicken wire. Each pen had one water trough. There were four feeders in the first pen; five in the second; and three in the third. Neither the feeders nor water troughs were equipped with reels. (See Atch 1 for dimensions of pens, coops, etc.).

b. Birds: The majority of the birds were White Leghorns. A few Rhode Island Reds were also present. The birds were active and exhibited normal movement when the pens and coops were entered. Some of the birds exhibited moderate feather loss. Stools from the birds appeared normal in color and consistency. Three stool samples later analyzed for parasites were negative. Water troughs and feeders were frequently walked in by the birds. There appeared to be approximately 300-400 birds in the first and third pens and approximately 400-500 birds in the second pen.

4. The following information was obtained through conversations with Mr. Lee and through examination of his daughter's records concerning the operation. Much of this information is subjective and several differences will be noted between the information obtained through conversation and that contained in the records.

a. History (acquisition of birds): According to Mr. Lee, the business started approximately three years ago as a Future Farmers of America (FFA) project for his daughter. 130 hens were acquired in the spring of 1977. Thirty of the hens were Rhode Island Reds approximately eighteen months of age. 100 White Leghorns approximately six months to one year of age were obtained from neighbors who raised the birds after they fell off a truck. In June, 1978, 1000 White Leghorns were purchased from Mr. Dan Landers in Paul, Idaho. The birds were just coming out of their first production and according to Mr. Lee were about twenty-two months old. An additional 400 White Leghorns were purchased from Mr. Landers in November, 1978. According to Mr. Lee, these birds were also about twenty-two months old and were just coming out of their first production. The birds were molting at the time of purchase. The daughter's records date back to July, 1976. Records indicate that the project began with twenty-six hens approximately one and a half years old. An additional twenty-five one year old birds were obtained in December, 1976. During 1977, eighty-one birds were obtained on 1 January, seven birds on 1 October and 101 birds on 17 November. All of these birds were reportedly one year old. The birds were obtained from private individuals and were not part of any commercial

flocks. As per conversations with Mr. Lee, the records indicate that 984 birds were purchased in June, 1978 and an additional 400 birds were purchased on 6 December 1978 from Mr. Dan Landers, a commercial poultryman from Paul, Idaho. Records indicate that the birds were eight months old rather than twenty-two months old as stated by Mr. Lee. In a telephone conversation with Mr. Landers himself, he indicated that the birds were actually sixteen months old at the time of purchase.

b. Inventory: In the claim, Mr. Lee stated that he owned approximately 1460 birds. In conversations, he claimed ownership of 1400 birds. The recorded opening inventory for 1979 listed 1173 birds. No birds have been purchased since December, 1978.

c. Management:

(1) Veterinary care and herd management support: Neither are presently utilized.

(2) Parasite control programs: No programs are presently utilized for either internal or external parasite control.

(3) Vaccination status: Birds obtained from Mr. Landers were vaccinated as chicks or poult's against Mareck's Disease, Newcastle's Disease and Infectious Bronchitis. Other birds have not been vaccinated. Mr. Lee does not administer any vaccines.

(4) Nutrition: Until the spring of 1978, the birds were fed a commercial ration (i.e., 16% Lay Mash). In April or May of 1978, Mr. Lee purchased a grinding mill and began mixing his own feed. The feed was mixed in the following manner: 300 pounds of 38% lay concentrate; 200 pounds of whole wheat; 800 pounds of whole corn; 30 pounds of salt; 100 pounds of calcite; 300 pounds of oats; and 10 pounds of aureomycin crumbles. Mr. Lee consulted Dr. Anderson, Poultry Department Head at Utah State University about the feed mixture. Dr. Anderson allegedly stated that the types and proportions of ingredients used in mixing the feed were correct. A feed sample was never analyzed however. The birds were fed this home mixed ration until 18 May 1979. The mill allegedly broke down at that time and the birds are presently being fed a 16% commercial lay mash. All rations have been supplemented with oyster shells fed separately. According to Mr. Lee, the birds are presently fed approximately 160-200 pounds of feed daily divided into three feedings. The birds are fed the same type and amount of food whether they are molting or are in production. No additives or antibiotics have ever been added to the water or any commercial ration.

(5) Housing: All of the coops were built by Mr. Lee. The two-by-four's utilized were creosoted; the wood was otherwise untreated. Two of the coops were built before the first birds arrived. The two additional coops were built in June 1978 before the newly purchased birds arrived. Insulation

was added to the outside of the coops in September 1978. On 12 May 1979, Mr. Lee increased the size of all the chicken pens. Mr. Lee was unsure about the size of the pens before or after enlargement. During the winter months the door to each coop was partially covered with burlap. Thermometers were allegedly kept in the coops and the temperature was maintained at 40 degrees F or higher. According to Mr. Lee, a radio is kept playing from about 0500 until the birds roost each night.

(6) Artificial lighting: No established artificial lighting schedule has ever been utilized. During the winter months, a 40 watt bulb in each of the coops was turned on at 0400 or 0500 and turned off at daylight. The lights were kept on all night on really cold nights and during the day when there was little sunlight available. The purpose of the lights, when utilized, was to provide warmth.

(7) Cleaning schedules: There are no established cleaning schedules for cleaning the coops, feeders, or water troughs. Water troughs, according to Mr. Lee, are cleaned three or four times weekly.

(8) Egg collection: Eggs are gathered three times daily.

(9) Culling: No established culling system is utilized. The only reference to culling in the records is one budget entry for value of culled birds (i.e., \$33.60).

(10) Molting: Force molting is not utilized. The birds purchased from Mr. Landers in June and December of 1978 were molting at the time of purchase. According to Mr. Lee, the birds go through a brief molt (i.e., feather loss, decreased egg production) for one to two weeks after each incident involving low flying aircraft.

d. Mortality: According to Mr. Lee, the mortality rate is approximately six to eight birds each month. The rate is allegedly higher for new birds and following each low flying aircraft incident. In the records, entries regarding mortality were made on the daily calendar of events. The total recorded mortality from August 1976- April 1979 was twenty-four hens. 180 deaths were recorded from 6 June- 15 July 1978 and an additional twenty-eight deaths were recorded 8 December 1978. Both large mortality entries followed the purchase of large numbers of birds. Low flying aircraft incidents were not mentioned in regard to any of the mortality entries. It is possible, however, that all mortalities were not recorded. According to the records, 1624 hens have been acquired since the beginning of the project. The beginning inventory for 1979 listed 1173 birds. With a total mortality of only 214 birds, 237 birds are unaccounted for.

e. Production: Mr. Lee began delivering eggs during the summer of 1978. According to Mr. Lee, production increased slowly over the summer months

reaching a peak in mid September of approximately 608 eggs per day. On individual days as many as 1080 eggs were collected. In the claim letter Mr. Lee states that he was selling about two and one-half cases of eggs (i.e., 75 dozen or 900 eggs) per day at peak production. Following this peak, production then began to decline. By October, the birds were only producing about 125 eggs per day. In November and December 1978, production continued to decline. According to Mr. Lee, he was forced to buy eggs from wholesalers to meet customer demands. The new birds purchased in November 1978 (i.e., 400 White Leghorns) did not begin producing well until January 1979. Production continued to increase until March 1979 when several incidents of low flying aircraft occurred. After these episodes, production allegedly declined rapidly, reaching a low point around the first of April. Production began to increase again in May. Since Mr. Lee filed the claim, he has called to report several more incidents of low flying aircraft which have allegedly produced a rapid decline in egg production, increased blood spots in the eggs, and hysteria in the birds. Production records were not maintained per se (i.e., number of eggs produced per hen housed). There were some entries on the monthly calendar of events to indicate number of eggs gathered per day. These entries, however, were complete only for the first three months of 1977. Sales records were maintained and an attempt was made to determine production based on average number of hens housed and number of eggs sold (see Atch 2 and 3). Eggs bought for resale were not counted in the totals. In comparing Mr. Lee's history of production with available records, some discrepancies were noted. According to Mr. Lee, he was forced to begin buying eggs from wholesalers for resale in October 1978 because of declining production in his own flock. Although records do indicate that the first purchases of wholesale eggs were made in October 1978, the records also indicate that the number of eggs sold from his own hens was higher in October 1978 than any previous month. In his claim, Mr. Lee states that at peak production he was selling about 900 eggs each day. This would amount to about 27000 eggs for the month. The highest recorded number of eggs sold from his own flock was 17052 in October 1978.

5. Mr. Lee claims that his flock's poor production record can be directly attributed to noise stress produced by low flying aircraft. To validate such a claim, the following must be proven:

- a. Low flying aircraft are in the area and have been flying over the coops at altitudes as low as fifty feet;
- b. Noise from low flying aircraft has historically caused decreased egg production in commercial laying flocks;
- c. The production rate of the flock in question is actually below the expected normal;

d. There are no other factors (i.e., other than aircraft noise) which could contribute to or be the sole cause of lowered egg production.

6. Although verification and positive identification of aircraft in the area has not been accomplished at the time of this report, Mr. Lee does have eye witnesses to verify his claim. Therefore, it will be presumed that low flying aircraft are in the area. How low the aircraft actually fly is unknown, however, since the information obtained from Mr. Lee and witnesses is totally subjective and dependent on their ability to judge distances and altitudes.

7. The United States Air Force has conducted numerous field studies under controlled conditions to determine the effect of aircraft noise on broiler production and egg production in laying flocks. One such study was conducted from June-September of 1966 by the Field Environmental Services from Brooks AFB. The study, the subject of the film "Buzzed Birds", was conducted in Arkansas, an area which is heavily engaged in poultry production. Eleven farms were involved in the study. Aircraft used in the tests were A-6's, A-4's, F-4's and B-52's. The planes flew at speeds from 20-600 kts and at altitudes as low as fifty feet over or near the poultry houses. Noise levels were as high as 99 decibels. Although the noise produced movement among the birds, there were no production losses during the period of the test (i.e., broiler weight gain or egg production).

8. Actual production records for the flock were not maintained. Egg production was approximated from sales records. Because numbers of eggs kept for home use or given away as charity were not always entered, these figures are not totally accurate. The number of eggs sold from the flock should be a close approximation of egg production, however. According to Mr. Lee, the incidents of low flying aircraft which have allegedly decreased egg production began in May of 1978. Based on available data, however, egg production appears to have been erratic since the beginning of the operation (see Atch 2 and 3). The two sharpest declines in production occurred in June and July of 1978 and in December 1978 and January 1979. Both of these declines were associated with the purchase of large numbers of birds coming out of their first production and entering a forced molt. The birds also experienced a change in diet around May or June of 1978 when Mr. Lee began mixing his own feed. The next steep decline in production occurred in April, 1979 allegedly following several low flying aircraft incidents in March, 1979. It should also be noted that the 984 birds purchased in June of 1978 would be entering the ninth month of their second production year. Decreased egg production and poorer egg quality would not be unusual at that time. These birds have reached the end of their productive life span and should be replaced. According to poultry specialists, a production rate of over 50% can be expected if a flock is managed well. The best poultrymen keep flocks producing from 60-75%. Based upon available data, the production rate for Mr. Lee's flock exceeded 50% in only five months during the period from January 1977-April 1979. A production rate below 50% is lower than the normal expected and necessary.

for efficient and economical egg production.

9. Egg production is a complex, dynamic process that is influenced by many factors. There are many things which can cause hens to stop laying eggs: the most common causes are decreasing daylength, disease problems, advancing age, improper nutrition, and stress (2). A sudden decline in egg production or a poor production record necessitates a careful examination of all aspects of flock management which should include the following:

a. Age of birds: Although hens may continue to lay eggs for years, they are efficient layers for a limited time only. Egg laying is most intensive in the pullet year of chickens but decreases almost linearly with advancing age (1). Good commercial flocks replace hens after twelve to fourteen months of lay. In some cases, the birds may be force molted and brought back into production for an additional six to eight months. The second year of production will not be as efficient as the first however. The bulk of Mr. Lee's flock are birds which were purchased in June and December, 1978, from Mr. Dan Landers, a commercial poultryman who runs a caged layer operation. The birds were coming out of their first production and were in a forced molt at the time of purchase. According to accepted standards, birds coming into their second production year can be expected to lay fairly efficiently for an additional six to eight months after which they should be replaced. Mr. Lee, however, apparently intends to keep these same birds in production through 1982. He is claiming damages for the years 1978-1982- the time period which he believes represents the productive life of his flock. If older birds are kept in production, production rate and egg quality can be expected to decline.

b. Culling: Culling is an essential management tool to insure efficient egg production. In good poultry flocks, owners may have culled as many as 50% of the original number of pullets before the first laying year ends (5). It is advisable to cull weekly. Mr. Lee does not cull on a routine basis. The only mention of culling in the records is one budget entry for value of culled birds.

c. Artificial lighting: Decreasing daylight length, which occurs naturally between June 22 and December 22, will frequently cause hens to molt and stop laying for about two months. To prevent this, artificial light should be provided to maintain a constant daylength of at least sixteen hours per day (2). Artificial lights should be provided from September through April (3). Mr. Lee does not use a definitive artificial lighting schedule. Lights are used inconsistently during winter months only to provide warmth. Failure to provide a constant daylength year round could very well have contributed to the decreased production noted in November and December of 1978 and to the overall erratic production noted since the beginning of the operation.

d. Housing: Layer houses should provide protection from weather and predators. To temper the extremes of heat and cold, the houses should be well ventilated and insulated. To prevent the entrance of potential disease carriers, they should also be bird, insect, and rodent proof. To help prevent ammonia build-up and to facilitate disease prevention, the floors should be constructed of material which is easily cleaned and disinfected and should be covered with approximately four inches of moisture absorbent litter. Mr. Lee's coops open directly into open air pens enclosed with chicken wire. There is no protection from insects or wild birds and essentially none from rodents. The adequacy of the coop insulation is questionable. Although sidewall insulation is present (i.e., feedbags and polyethylene), there is no ceiling insulation. The floors are dirt- a material which is difficult to clean and virtually impossible to disinfect. There is no litter present in any of the coops. Exposure to temperature extremes is a stress on the birds which often results in decreased egg production. Exposure to wild birds and insects which often serve as disease carriers could result in an acute or chronic disease situation in the flock which would lower egg production. Chronic diseases are often subtle and difficult to detect without meticulous post-mortem exams.

e. Floor space: Layer houses shoud have at least two square feet per bird housed (9). If pen and coop space are considered together, Mr. Lee's flock should have ample space to avoid crowding. Mr. Lee enlarged all the pens, however, on 12 May 1979, and the size of the pens prior to enlargement is unknown. The birds' only protection from inclement weather is inside the coops and if coop space alone is considered, the birds would be crowded. The total square footage of the first coop is approximately 240. This would be enough floor space for 120 birds. Mr. Lee claims to have 400+ birds in this coop. The two middle coops combined have approximately 280 square feet of floor space- enough for 140 birds. These coops allegedly house 500+ birds. The third coop has approximately 160 square feet- enough for 80 birds- but supposedly houses 400+ birds. Crowding is a management stress that reduces resistance to disease and may result in decreased egg production.

f. Feeding: Twenty-five light breed hens will eat six to seven pounds of feed per day (i.e., .24-.28 pounds/bird/day) (8). There should be at least three linear inches of feeder space for each layer. Feeder height should be equal to or slightly higher than the height of the birds' backs and trough type feeders should be equipped with reels to keep birds out of the troughs (9). Commercial feeds for layers are considered the best ration although home mixed and ground rations are suitable when content and proportions of ingredients are correct. The adequacy of any ration can be determined by feed analysis. Mr. Lee utilizes trough type feeders. The height of these feeders is lower than the height of the average bird's back and none of the feeders are equipped with reels. Using the standard of three linear inches of feeder space per bird, there is enough feeder space for 176 birds in the first coop, 346 birds in the second and third coops together, and 208

birds in the third coop. This is inadequate for the number of birds allegedly housed in each coop. Mr. Lee claims to feed approximately 1400 birds 160-200 pounds of feed each day. Fourteen hundred birds should consume at least 336 pounds of feed per day. From approximately May 1978 to May 1979, Mr. Lee mixed and ground his own feed ration. The formula he allegedly used appears to be correct. A feed sample was never analyzed, however, and at the time of this investigation none of the feed was available. The birds were fed a commercial ration prior to May 1978 and after May 1979. Proper nutrition is vital to efficient egg production. Failure to provide adequate amounts of feed and feeder space and failure to prevent spillage and soiling of feed by properly constructed feeders are all factors contributing to poor nutrition and hence poor egg production.

g. Water: Clean, fresh water should be available at all times. Waterers should be cleaned daily and rinsed with a good disinfectant once every week. The height of the waterers should be the same as the feeders. If trough type waterers are used, at least one linear inch of waterer space should be provided per layer (9). Waterers should be placed so that no bird will have to walk more than ten feet to drink (6). The water temperature should be maintained between 50-55 degrees F. When the water temperature drops near freezing, water consumption by the birds will drop as much as 25%. At temperatures between 90-95 degrees F, water consumption decreases drastically and at a temperature of 105 degrees F, birds will not drink unless they are very thirsty (6). Hens without water for only a few hours may stop laying for days or even weeks (2). Mr. Lee utilizes trough type waterers. The height of these waterers is lower than the height of the average bird's back. According to Mr. Lee, the troughs are cleaned three or four times weekly (not daily as recommended) and are not disinfected. The water troughs are in the pens and are not shaded. The water temperature is therefore subject to fluctuations in line with environmental temperature changes. There is only one water trough in each pen so many of the birds must walk more than ten feet in order to drink. Using the standard of one linear inch of waterer space per bird, there is enough waterer space for 144 birds in each pen. This is inadequate for the number of birds allegedly kept in each pen. Failure to provide easy accessibility to water or to provide adequate amounts of clean properly tempered water and waterer space will result in decreased water consumption by the birds. Decreased water consumption results in decreased egg production.

h. Number of nests: Layers should be provided with plenty of nests. When individual nests are used, one nest should be provided for each five layers (7). Mr. Lee has provided his birds with fifteen individual nests in the first and fourth coops and a total of twenty-three nests in the two middle coops. This is adequate for about 265 birds only and is obviously inadequate for the number of birds allegedly housed in these coops. Failure to provide adequate numbers of nests may result in management problems such as egg eating and floor eggs. Since floor eggs are dirtier and frequently cracked or broken, this could result in economic loss.

i. Sanitation: Commercial poultrymen clean and disinfect poultry houses and equipment thoroughly between flocks. This helps to reduce disease and stress in the new flock. Mr. Lee's coops have not been empty since the first birds were purchased. Although he claims that the coops are cleaned on an irregular basis, thorough cleaning and disinfecting would be impossible not only because birds are always present, but also because of the construction of the coops (i.e., dirt floors).

j. Parasite control: Birds that are uncomfortable from internal or external parasites will suffer in egg production. Birds should be treated for internal parasites before coming into production. External parasites should be controlled by treating both the birds and the houses. The best time to treat the houses is when they are empty. Mr. Lee does not utilize either an internal or external parasite control program. The majority of his flock were commercial cage layers during their first production (i.e., prior to being purchased by Mr. Lee). A change in environment from cages to open dirt pens is conducive to internal parasite infestations. Although three fecal samples analyzed were negative for ova, the validity of these results must be questioned as the samples were twenty-four hours old before analysis was possible and they were not transported under refrigeration. Although external parasites were not directly observed on the birds, certain parasites such as the chicken mite live off the birds during the day (i.e. in cracks and crevices of the houses) and attack the birds at night. Some scratching and feather loss by the birds was observed and since the birds are untreated, the possibility of an external parasite problem exists.

k. Change in environment: Changes in environment create stresses which lower disease resistance and reduce egg production. The majority of Mr. Lee's birds were cage layers coming out of their first production year at the time he purchased them. The birds, already stressed by a forced molt, were further stressed by several hours of transport and a complete change of environment. The birds were taken from the totally controlled environmental system of the caged layer and placed in a virtually uncontrolled environment on dirt floors. The birds were then additionally stressed by being taken off a commercial layer feed and being placed on a home mixed ration. Such tremendous stresses not only result in higher mortality rates, but also significantly reduce the productive capacity of the birds.

l. Economic management: Only a relatively small profit/dozen (eggs) is made by efficient operators (6). Efficient egg production as well as sound economic management is essential if profits are to be made by the poultryman with a small flock. The following has been said about the home unit poultry flock:

Mass production of broilers and eggs has resulted in prices that usually make it uneconomical for a family to produce their own eggs or fryers. A small flock of layers can be an excellent project for youngsters, however, and a delivery route serving customers who are willing to pay a premium for fresh, high quality eggs can be a profitable enterprise (3).

Some points to consider in estimating the cost of one dozen eggs include layer depreciation cost (i.e., the salvage or meat value of layers at the end of the laying year will just about offset the loss from mortality of layers), feed costs, equipment and housing costs, electricity for artificial lights, labor costs, and transportation costs if eggs are delivered to customers. One such economic study estimated the cost of producing one dozen eggs at 66.16¢ (i.e., based on a production of nineteen dozen eggs/hen housed: approximately 62%) (4). With an average selling price of 73.45¢/ dozen eggs, this would yield a net return of 7.29¢/ dozen. If each bird lays nineteen dozen eggs during the year, that amounts to \$1.38 net profit per bird. Based on these averages, Mr. Lee's 1400 birds would yield a net profit of \$1932 for one year of production. This profit margin could not be expected from year to year from the same group of birds, however. Production decreases linearly from year to year with advancing age. Mr. Lee's flock has not averaged a 62% production. When production is lower but other costs (i.e., feed, labor, etc) remain the same, a higher price would have to be obtained for each dozen of eggs in order to maintain the same profit margin. Mr. Lee, however, has sold the majority of his eggs at an average of 65¢/ dozen, even when production was low. This is lower than the average cost to produce a dozen eggs with a flock production rate of 62%. Mr. Lee has also allegedly been buying eggs from wholesalers and delivering these eggs to customers for the same price that he purchases them. His daughter's records also indicate that the birds increase in value with increasing age. The birds are included with the non-depreciable property inventory. The original twenty-six one-and-a-half year old birds were valued at 1.50 each in June of 1976 and \$3.00 each in December of 1976. The birds remaining from the original twenty-six were listed as being one-and-a-half years old on the 1979 inventory and valued at \$4.00 each. In actuality, the value of a layer depreciates with each production. Most are sold or salvaged after one production year. Mr. Lee does not appear to have a sound knowledge and understanding of the actual worth of his birds, the actual costs of production, or the realistic potential for production and profit from this flock.

10. Summary: It is my opinion and judgement based on the evidence presented in this claim, that the poor production record of Mr. Lee's layers can be attributed to a combination of factors reflecting poor general management. The housing of these birds is inadequate: coop space is insufficient; there is no ceiling insulation; the dirt floors can not be

thoroughly cleaned or disinfected; and there is no litter present. The housing provides no protection from wild birds, insects, or rodents. The number of nests provided is grossly inadequate. Feeders and waterers are improperly constructed (i.e., insufficient height, no reels) and are not cleaned often enough. Feeder and waterer space is inadequate and the amount of feed fed to the birds is also insufficient. Mr. Lee does not follow accepted poultry management practices. Artificial lighting is used inconsistently only for warmth and not on a definitive schedule to provide a constant daylength. Culling is not consistently or routinely practiced. The coops are not emptied between groups of birds and thoroughly cleaned and disinfected. The coops in fact are never emptied since Mr. Lee does not follow the accepted practice of replacing birds in their second production after an additional six to eight months of lay. Mr. Lee intends to keep his present flock in production through 1982- a total of six years of production for these birds. Production records indicating numbers of eggs laid per hen housed are not kept, nor are accurate mortality records maintained. Mr. Lee has claimed that aircraft have been flying over his farm at low altitudes since the spring of 1978. Noise from these aircraft has allegedly produced hysteria in the flock, poor egg quality (i.e., blood spots) and drastically reduced egg production. Several studies have been done by government agencies in areas heavily engaged in poultry production to determine the effect of aircraft noise on egg production. Results of these studies have shown that although an alert reaction is generated in laying flocks by aircraft noise, there is no appreciable decrease in egg production. It is my professional opinion that poor production would be a problem in Mr. Lee's layers even if aircraft noise were not an issue. A high rate of production can not be expected from a flock of poorly managed older birds.

11. I recommend disapproval of this claim due to lack of proof of causation by the USAF. At the time this report is being written, there is no verification of aircraft in the area in question. Even if low flying aircraft are in the area as per witnesses for Mr. Lee, aircraft noise is not the most probable cause for the poor production noted in Mr. Lee's flock. The most probable causes for the poor production noted in the flock are the management deficiencies noted above and the advancing age of the birds. The opinion that management, and not aircraft noise, is responsible for the poor production record of the flock is supported by the fact that available records indicate that production was erratic prior to the time that the alleged low flying aircraft incidents began. This opinion is further supported by studies that indicate that aircraft noise is not a significant factor in reducing egg production.

Kristin L. Schmitz
KRISTIN L. SCHMITZ, Captain, USAF, VC
Base Veterinarian

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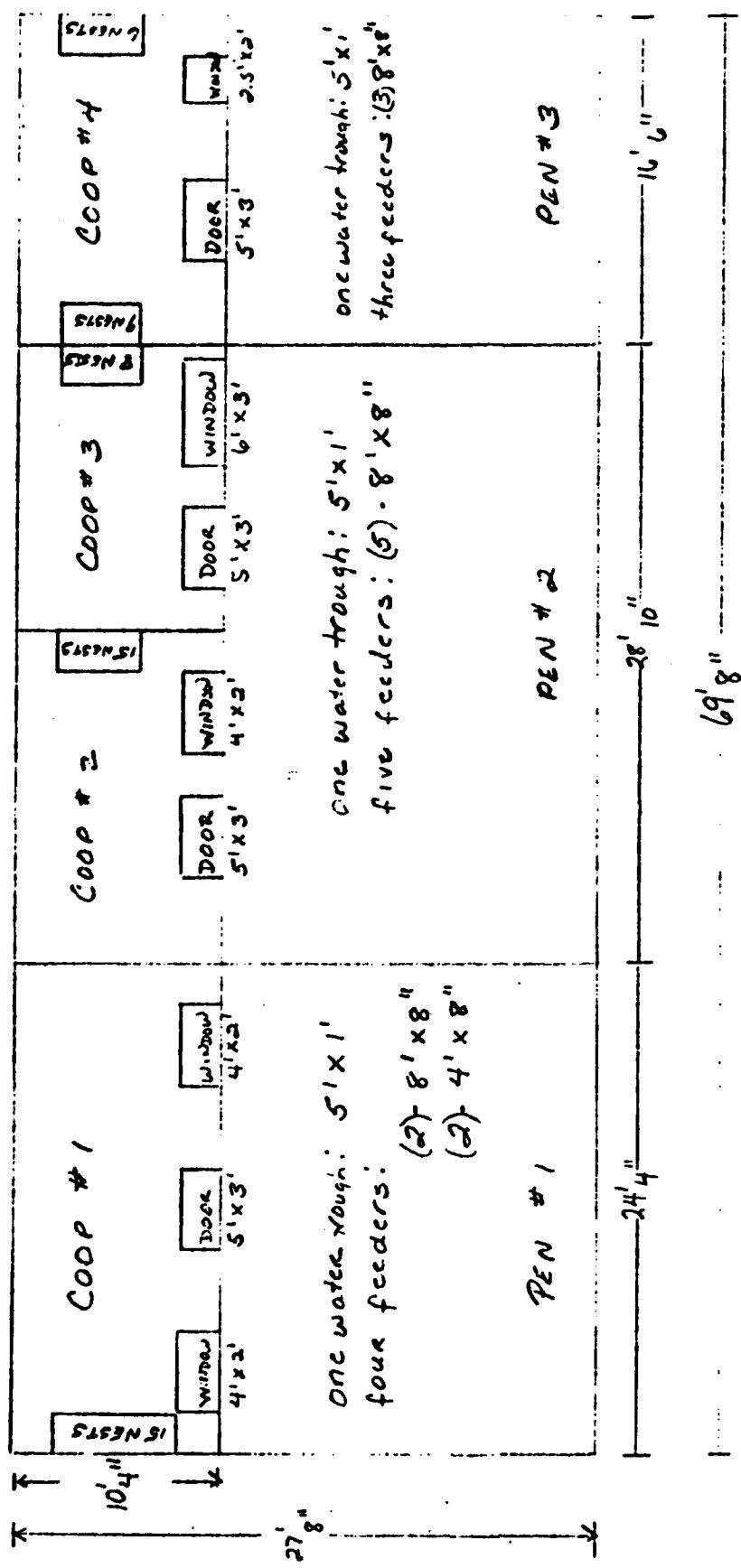


DIAGRAM OF CHICKEN COOPS AND PENS SHOWING DIMENSIONS

Atch 1

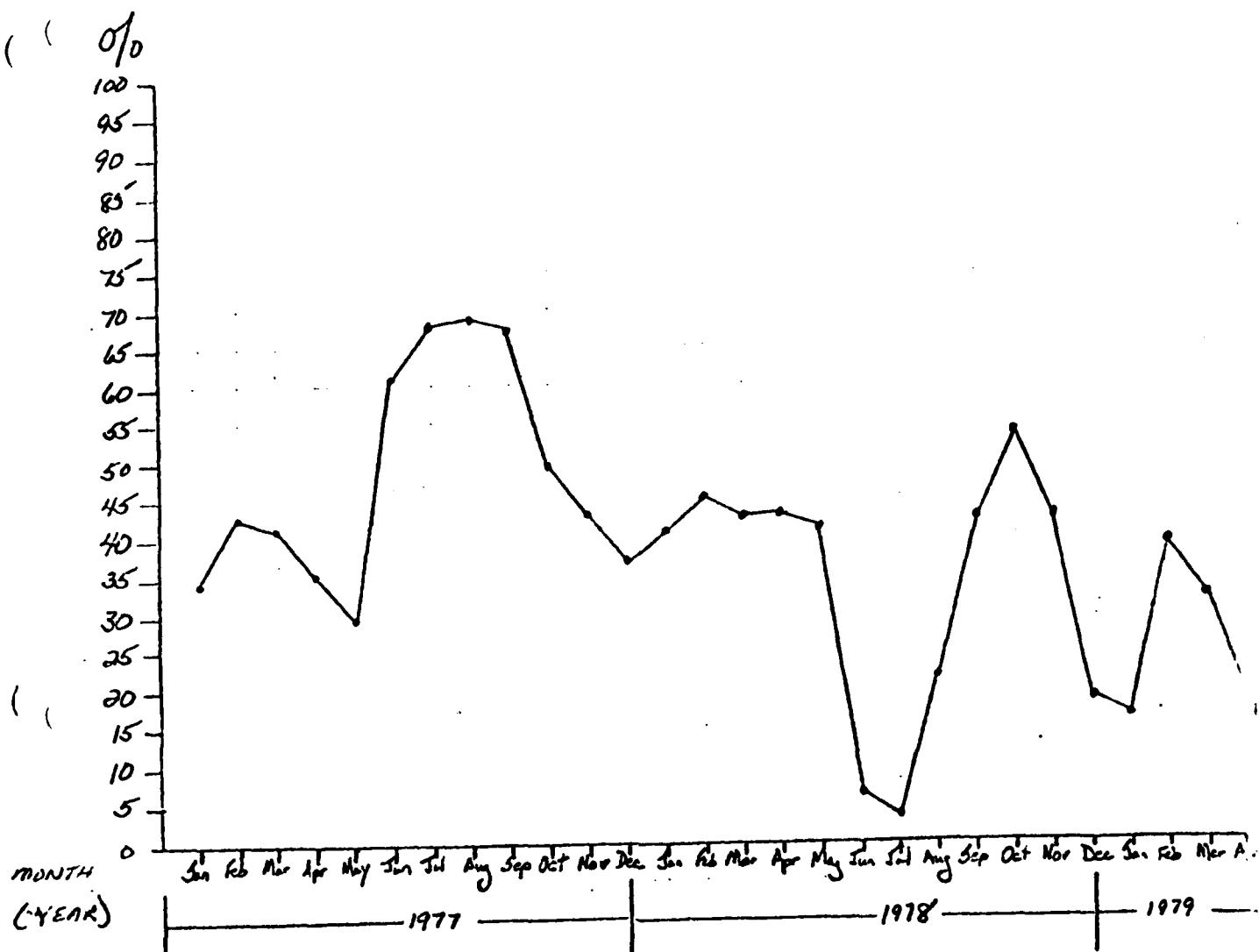
PRODUCTION BASED ON EGGS SOLD AND AVERAGE NUMBER OF HENS HOUSED

<u>YEAR</u>	<u>MONTH</u>	*	<u># EGGS SOLD</u>	<u>AVG # HENS HOUSED</u>	<u>PRODUCTION (%)</u>
** 1977	Jan		768	129	34.4
** 1977	Feb		1260	128	42.9
** 1977	Mar		1236	128	41.6
1977	Apr		1344	128	35.0
1977	May		1176	128	29.6
1977	Jun		2352	128	61.2
1977	Jul		2736	128	68.9
1977	Aug		2700	128	68.0
1977	Sep		2580	128	67.2
1977	Oct		2052	134	49.4
1977	Nov		2412	184	43.6
1977	Dec		2664	235	36.5
1978- INVENTORY 21 Jan 78: 217 Hens					(18 difference)
1978	Jan		2748	217	40.8
1978	Feb		2760	217	45.4
1978	Mar		2952	217	43.8
1978	Apr		2880	216	44.4
1978	May		2760	216	41.2
1978	Jun		1896	1020	6.2
1978	Jul		1176	1020	3.7
1978	Aug		6576	1020	21.0
1978	Sep		12840	1020	42.0
1978	Oct		17052	1020	53.9
1978	Nov		13128	1020	42.9
1978	Dec		8556	1392	19.5
1979- INVENTORY 1 Jan 79: 1173 Hens					(219 difference)
1979	Jan		6012	1173	16.5
1979	Feb		13056	1173	39.7
1979	Mar		11640	1173	32.1
1979	Apr		6672	1173	19.0

* Eggs purchased for resale are not included in these totals

** Production for these three months based on eggs gathered

PERCENT PRODUCTION: BASED ON AVERAGE # OF HENS HOUSED AND EGGS SOLD



Atch 3

Appendix F

**Claim of Duane Rishel
(Chickens/Aircraft Noise)**

OPINION OF USAF OEHL STAFF VETERINARIAN

Claim of: Duane Rishel
RD #1
Brookville, PA 15825

I, Bruce W. Martin, Captain, USAFR, BSC, having been requested to review the claim of Duane Rishel against the US Air Force, herein present the following information, comments, and recommendations relative to the claim.

I possess the following academic degrees:

Bachelor of Science - Agriculture -- 1975, Oklahoma State University
Doctor of Veterinary Medicine -- 1975, Oklahoma State University

I have completed 3-years of a 4-year program to receive a Doctor of Philosophy in Veterinary Toxicology from Texas A&M University. I am presently employed as a three-quarter time assistant instructor at Texas A&M and serve as a Mobilization Augmentee with the USAF OEHL at Brooks AFB TX.

My experience includes an extensive farming background gained while growing up and living on a farm in northwest Arkansas. I worked on an 18,000-bird commercial broiler operation for 4 years. I received 4 years of extensive training in vocational agriculture while in high school. I actively participated in 4-H and FFA with beef and swine projects as well as livestock and crop judging. I also studied livestock husbandry, nutrition and pathology as part of the undergraduate animal science curriculum at the University of Arkansas. As a result of my advanced academic degrees, I have received extensive training in livestock management, nutrition, physiology, diseases, pathology and parasitology.

ORIGINAL SIGNED BY

BRUCE W. MARTIN, Captain, USAFR, BSC
Mobilization Augmentee

OPINION OF USAF OEHL STAFF VETERINARIAN

Claim of: Duane Rishel
RD #1
Brookville NJ 15825

1. Claimant alleges that low flying aircraft caused his laying hens to molt prematurely which resulted in a loss of egg production during the year 1978. He supplied production records for the years 1975 through 1979 for our analysis. The records that he submitted were in the form of Agway Performance Charts with percent hen-day production (PHDP) plotted at weekly intervals.
2. Examination of the performance charts revealed that for each year, 1975 through 1979 (excluding 1978), Rishel Farms claims 253.2 to 274.1 eggs per hen at 52 weeks of lay (average 264.5). This is an above average record and indicates good management practices on this farm. For the year 1978, 231.5 eggs per hen are claimed at 52 weeks of lay. For the year 1978 there were two sets of data provided, one of which terminates at 49 weeks of age (29 weeks of lay) and the other which terminates at 76 weeks of age (56 weeks of lay). For the weeks that the two records have in common, the data is not in agreement and reveal significant differences. The reason for this difference is not evident.
3. Examination of the two 1978 performance charts indicates that between 28 and 32 weeks of age there was a 4% drop in PHDP, that between 42 and 47 weeks of age there was a 14% drop in PHDP, and that between 52 and 57 weeks of age there was a 12% drop in PHDP. It is also noted that the PHDP is unusually erratic from 57 through 76 weeks of age, with both ups and downs.
4. Based on consultation from experts in the egg production business, drops in egg production in the 2-3 weeks of duration range are often due to infectious causes (e.g. viral pneumonia) while those in the 5-6 weeks of duration range tend to be due to physical injury such as skin wounds. It has been observed that startled hens (as by a loud noise) jump into the air and may land on each others backs causing skin lacerations. It could be speculated that the two major dips in egg production were due to physical injury resulting from a startle response.
5. The claim that the first major drop in egg production was due to low flying aircraft, and the duration of the production dip are consistent. However, no explanation is provided for the cause of the second production dip. That leads to the question: Did some other cause result in both dips? The erratic production for the rest of the laying period is also inconsistent with the relatively smooth curve expected, once the hens have healed from their wounds. It is more consistent with some kind of ongoing or recurring problem.

6. Assuming that the low flying aircraft flew directly over the laying houses, it is possible that they could have caused the production loss as claimed. It is also possible for any other loud noise (auto horn, thunder, etc.) to have caused the problem. The irregular production curve casts doubt on the flyovers as the single cause.

7. Assuming that the low flying aircraft flew by the laying houses 9 miles away, the production loss could not have been caused by the aircraft noise. This much distance would not result in sufficient decibels reaching the laying houses to cause the startle response.

8. In the event that it is assumed that the low flying aircraft were the cause of the Rishel Farms production loss, a computer analysis was performed on the production records of the claimant to determine the estimated loss. Based on the analysis, at 72 weeks of age (52 weeks of production) the estimated loss per hen is 9.6 eggs. At 80 weeks of age (60 weeks of production) the estimated loss per hen is 12.0 eggs. The complete report of the consulting statistician is attached for your information (Atch 2).

To estimate the total number of eggs that would have been layed by an average hen under normal conditions by N weeks of age given no fly-over at 42 weeks, the following steps were taken:

- (1) For 20 through 42 weeks of age, actual PHDP values supplied by Rishel Farms were used. Starting at 43 weeks of age and following, PHDP values were estimated by taking a curve with the same shape as that on the Agway Performance Chart and extending it in such a way that it intersected the actual PHDP values at 42 weeks.
- (2) Using the PHDP values determined in step (1), the total number of eggs that would be layed as of N weeks of age by an average hen if no fly-over occurred was estimated by summing the PHDP values from 20 through N weeks of age and then multiplying this sum by 7/100.

Using the method described above, the following estimates were obtained as of 72 weeks of age for the years 1975 through 1977 and 1979. The actual production claimed for an average hen is also shown for these years.

<u>Year</u>	<u>Estimate</u>	<u>Actually Claimed</u>
1975	250.46	253.16
1976	269.61	274.06
1977	272.13	269.73
1979	262.56	261.13

For the year 1978, the methods described above were also tried. In addition, the calculations were repeated using actual PHDP values through 49 weeks of age and estimated PHDP values for 50 weeks of age and following. All actual values were taken from the original production chart for 1978 which was submitted. The complete set of values are contained on attached computer output (Table 2), an abbreviated summary of which is shown in Table 1. There one can see that the estimated loss depends on the cutoff for age in weeks. At 72 weeks of age, the estimated loss is 9.6 eggs per hen ($=268.5 - 258.9$). At 80 weeks of age, it is 12.0 eggs ($=302.1 - 290.1$).

I will be glad to go over this report in detail with you if there are any questions that need clearing up.

William G. Jackson Jr.

WILLIAM G. JACKSON, JR.
Consulting Statistician
Advanced Analysis Branch

2 Atch
1. Table 1
2. Table 2 (2 pgs)

Livestock Claim -- Egg Production

Lt Col J. E. Milligan
USAF OEHL/ECE
Environmental Assessment Br
22 September 1981

The purpose of this report is to provide an estimate of the loss in egg production in 12,000 laying hens due to low flying military aircraft during 1978 at Rishel Farms. Data were provided by the affected farm for the years 1975 through 1979. For each of these five years, the average "percent hen-day production" (PHDP) was plotted weekly on an Agway Performance Chart (A-3301 3/78) for a period that covered from about 20 weeks of age to about 75 weeks of age. In addition, the total number of eggs per hen housed was given, as follows:

Date of Housing	Breed	Total No. of Eggs Claimed per Hen Housed (at 52 weeks of lay)
January, 1975	H&N	253.16
February, 1976	DeKalb XL	274.06
April, 1977	H&N	269.73
April, 1978	DeKalb XL	231.50
June, 1979	H&N	261.13

To estimate the loss in production, the given data were used together with several assumptions. The key assumption was as follows:

$$\text{PHDP} = \frac{100}{7} \frac{(\text{Total number of eggs laid in one week})}{(\text{Total number of hens originally housed})}$$

The critical element in this assumption is that the quantity in the denominator is "total number of hens originally housed" and not something like "total number of hens still alive for that particular week."

A second assumption which was made is that the effect of the low-flying aircraft would show up as an initial dip lasting for about six weeks, at which time production would resume a characteristic profile from some reduced level. In other words, any departures from the PHDP production profile shown on the Agway Charts which occurred more than six weeks after the fly-over were assumed to be due to other causes.

A third assumption was that the data provided by the affected farm are accurate. In this regard there were two sets of data provided for 1978, one of which terminated after the hens were 49 weeks of age and one of which continued on through 79 weeks of age. For the period between 20 and 49 weeks of age, these two data sets were not in agreement, and the magnitude of the disagreement was large enough to make a difference in attempting to estimate the loss.

Appendix G

**Claim of Charles J. Close
(Horse/Aircraft Noise)**

25 APR 1979

SGV

Claim of Mr. Charles J. Close

56 CSG/JAD (Captain Brown)

1. In accordance with AFR 163-13, Veterinary Aspects of Claims, and your request, the following report, subject as above, is submitted for your information and use. It represents the Veterinary Service portion of this claims investigation as of 18 April 1979.

2. General:

a. Claimant: Mr. Charles J. Close, 5333 Garden Lane, Tampa, Florida 33610 (phone 626-0503).

b. Claimant's allegation: Mr. Close alleges that on 10 April 1979, at approximately 1550 hours, his quarter horse stallion was injured as a result of a low altitude flyover by four military aircraft. Specifically, the four planes approached his establishment (a breeding and boarding stables) from a westerly direction at an altitude of approximately 1,000 feet. When directly overhead, the planes turned sharply upward emitting a loud noise which frightened his stallion then secured to a mechanical rotary walker. Mr. Close stated that in the past his stallion was not bothered by overflights but that all such flights were high altitude and not loud.

c. Animal description: The animal is a quarter horse stallion foaled on 15 May 1970, and weighing approximately 1,200 pounds. The horse is registered with the American Quarter Horse Association (registration number 760249) by the name Smuggler's Loot. See photos #1, #2 and #3.

d. Alleged injury: Mr. Close alleges that following the flyover his horse sustained injuries to the rump (bruising and swelling), forefeet (swelling and lameness), and prepuce (swelling) and was in shock. He also stated that he did not attempt to breed the stallion with two mares boarded at his stables because he was concerned that coitus would aggravate any existing injuries and that any foals sired by the stallion would be abnormal.

e. Air Force involvement: MacDill Air Force Base flight operations confirmed that a flight of four F-4D aircraft was present in the area of Mr. Close's establishment on the day and at the time indicated by Mr. Close. The four planes had just made a scheduled

flyover of the Florida State Fair at an altitude of 1,000 feet and, therefore, would have started to climb in the vicinity of Mr. Close's establishment, approximately 1½ miles east.

3. Veterinary findings on 12 April 1979:

a. The undersigned, together with Captain Brown/JAD and A1C Vaughn/SGV, first visited Mr. Close on this date at 1330 hours. Mr. Close gave the following account of the incident: At the time of the flyover, his stallion was secured to a mechanical rotary walker by means of a nylon halter and lead chain (see photo #4). A second horse (uninjured as a result of the flyover) was secured to the same rotary walker. Upon emission of the loud noise, the stallion bolted and broke free from its halter and the rotary walker, backed into a fence post (see photo #5) and then staggered approximately 30 feet to the southeast where it somersaulted over two logs (see photo #6) landing on its rump in a clear sandy area. On the evening of 10 April 1979, Mr. Close administered 20cc of Combiotic (an antibiotic containing penicillin and streptomycin) intramuscularly in the stallion's rump because he believed the horse was in shock. A second intramuscular injection of Combiotic (10cc) was administered by Mr. Close on the morning of 11 April 1979, when he first noticed signs of lameness and swelling of the rump and prepuce. A third intramuscular injection of Combiotic (10cc) was administered by Mr. Close on the evening of 11 April 1979. Mr. Close also stated that he applied ice packs to the prepuce several times each day to try and reduce the swelling.

b. The mechanical rotary walker depicted in photo #4 did not appear damaged; operation of the electric drive motor was not observed. Mr. Close stated that the walker was damaged (gears were stripped) when the stallion bolted and broke free. However, he also mentioned that at the time of the noise emission, both horses began pulling in opposite directions on their leads. If this action did in fact occur, it would be unlikely that the drive gears in the walker would be damaged (stripped).

c. The fence post depicted in photo #5 was devoid of hair, skin and/or blood. It is likely that remnants of one or all of these tissues would be present considering the rough splintery surface of the post and the alleged force of impact. Examination of the stallion's rump and posterior and lateral thighs was unremarkable. There was no evidence of hair loss, swelling and/or lacerations which would indicate that the force of impact was less violent than stated. Also, Mr. Close stated that impact with the fence post was severe enough to abrade the surface of the post making it "lighter in color" than the rest of the post (see photo #5), area to the left of the vertical chain. If so, then all the more reason to expect to find tissue debris from the stallion's rump remaining.

b. Physical examination of the stallion revealed the following:

(1) There was mild to moderate swelling ventral and posterior to the preputial orifice to include the ventral abdominal skin immediately anterior to the prepuce. Except for a small area of induration in the ventral prepuce, the swelling was soft and would "pit on pressure". Pitting on pressure is indicative of an edematous condition for which there are numerous causes. It should be noted here that the prepuce is the ventral most region of the abdomen and, therefore, the point at which extra-cellular fluids will accumulate as a result of gravitational forces. Additionally, gravitational forces will impede resorption of extracellular fluids resulting in swelling (edema) which will remain for varying lengths of time.

(2) The tissues associated with and immediately adjacent to the prepuce were not swollen (edematous). The stallion exhibited no evidence of pain when the testicles, epididymis, prepuce and inguinal area were palpated. During the examination, the stallion extended and contracted his penis through the preputial orifice normally and without any apparent discomfort. The penis was not swollen or otherwise injured; erection was not observed. Except for the preputial swelling, gross physical findings were unremarkable and gave no indication that the stallion could not be used for breeding.

(3) Palpation of the lumbar and gluteal muscles (rump) was unremarkable. These areas were devoid of gross lesions (hair loss, swellings and lacerations) and were not sensitive when palpated.

(4) There was no evidence of lameness in the standing position or when the stallion was walked or trotted.

(5) Appetite for both food and water had been maintained since the flyover. Bowel movements were normal but urination was not observed.

e. It should be mentioned here that preputial swelling was not observed by Mr. Close until the morning following the overflight. This could indicate that swelling of the prepuce was a secondary symptom and possibly dependent edema. For example, the injection sites used by Mr. Close when he administered the three doses of Combiotic were in the rump. If the injection technique as well as the sterility of the injection were compromised, preputial edema could occur as a result of infection.

f. It was suggested to Mr. Close that the stallion be examined by a civilian veterinary practitioner.

4. Veterinary findings on 13 April 1979:

a. Major John H. Causey, USAFR, VC, accompanied the undersigned to Mr. Close's establishment on this date for the purpose of establishing a second opinion. Major Causey found the stallion's physical condition to be unremarkable except for the mild to moderate preputial swelling. He stated that there are many causes for preputial swelling; e.g., breeding stallions can incur this type of injury at coitus, during intromission, or by being kicked during pre-coital teasing. He further stated that the injury appeared to be only cosmetic in that the stallion had control of its penis, had normal libido and because there was no injury to the testicles and epididymis.

b. On 13 and 16 April 1979, Mr. Close's stallion was attended by a private veterinary practitioner (Dr. A.S. Ricker, Highway 574, Seffner, Florida). Dr. Ricker prescribed ice packs and oral dexamethasone (a steroid) for the preputial swelling on both occasions. Major Causey called Dr. Ricker on 18 April 1979, for the purpose of discussing the stallion's physical condition. Dr. Ricker stated that in his opinion the preputial swelling was temporary and would regress in time; he could offer no new ideas as to the cause of the swelling. He also stated that during his initial examination on 13 April 1979, he could detect no evidence of lameness in the stallion.

5. Opinion: It is likely that Mr. Close's stallion was frightened as a result of the low level overflight on 10 April 1979. The damages and injuries alleged by Mr. Close to have occurred subsequent to the overflight could not be substantiated; the only possible exception was the preputial edema. However, after hearing Mr. Close's account of the events following the overflight and the opinions of Major Causey and Dr. Ricker, it is my opinion that the preputial swelling/edema most likely resulted from causes unrelated to the overflight. This opinion is based on the following: (a) Considering the manner in which the stallion made contact with the fence post and the manner in which he fell, injury to the prepuce, either self-inflicted or by inanimate objects, would be a remote possibility; (b) Severe trauma to the rump might result in preputial swelling, however, no gross lesions could be detected by the examining veterinarians; (c) Intramuscular injections in the rump, if not administered aseptically and properly, could produce preputial swelling due to infection or abnormal tissue reaction; and (d) Breeding accidents are not uncommon in stallions and will produce injuries of this type. Additionally, there was no evidence that the stallion was lame or could not be used for breeding. Likewise, there is no documented evidence to indicate that preputial edema in the stallion is a teratogenic factor and will result in abnormal/malformed foals. Therefore, because Air Force causation cannot be fully substantiated, any remuneration to Mr. Close

should be strictly limited to the expenses he incurred as a result of professional veterinary assistance between 10 and 16 April 1979.

William F. Mohri
WILLIAM F. MOHRI, LtCol, USAF, VC
Chief, Veterinary Services

10 Atch
1-3. General Views of Horse
4. Rotary Walker
5. Fence post
6. Logs
7-10. Views of preputial edema

Cy to: USAF OEHL/SA
Brooks AFB, TX w/a

Appendix H

**Claim of Lou Ann Strang
(Dog/Surgical Complication)**

CLAIM OPINION

29 NOV 1979

Claim of: Mrs Lou Ann Strang
2322 Monte Cristo Drive
Sherman, Texas 75090

PREFACE

I, Charles E. Thalken, Lieutenant Colonel, United States Air Force Veterinary Corps, having been requested to express my professional opinion on this claim against the United States Air Force for alleged negligence on the part of an active duty Air Force veterinarian during the performance of a routine, elective, canine ovariohysterectomy and subsequent exploratory laparotomy, and follow-up medical treatment, herein present the following professional credentials:

I possess the following academic degrees:

Doctor of Veterinary Medicine - Colorado State University, 1965
Master of Science - Texas A&M University (Laboratory Animal Medicine), 1970

Diplomate, The American College of Laboratory Animal Medicine
Board Certified as a Specialist in Laboratory Animal Medicine
Chief Veterinarian's Badge as a Veterinary Clinical Specialist
in Laboratory Animal Medicine

My experience includes livestock husbandry experience gained while growing up and living on a farm and ranch. I was active in the 4-H and Future Farmers of America organizations in my teenage years, raising, showing, and judging various species of livestock. I worked part-time for local area mixed practice (large and small animals) veterinary practitioners while attending high school. While attending veterinary college, I was employed as an intern in a small animal practice for two years, and worked as a summer intern in the University Veterinary Clinic.

I have completed 14 years active duty with the United States Air Force. During this time, I have practiced base level veterinary medicine, zoonoses control, and public health for three years. I completed two years training as a Resident in Laboratory Animal Medicine at the United States Air Force School of Aerospace Medicine, and continued to instruct in that program for two additional years.

I was an Associate Professor at the United States Air Force Academy for five years, teaching Developmental Anatomy and Embryology, Environmental Public Health, and Canine Surgery to premedicine students. During the past two years, I have been directly involved in various ecological, toxicological, and environmental health research projects and applied wildlife field investigations.

Charles E. Thalken

CHARLES E. THALKEN, Lieutenant Colonel, USAF, VC
Chief, Environmental Assessment Branch

29 NOV 1979

OPINION

Of a Veterinary Clinical Specialist - Board Certified in Laboratory Animal Medicine

I have reviewed the claim of Mrs Lou Ann Strang, 2322 Monte Cristo Drive, Sherman, Texas 75090, which was sent to this office by the Claims Officer, Laughlin Air Force Base, Texas 78840, requesting a review and professional opinion of the facts presents. I herein present the following information, comments, recommendations, and personal opinions relevant to this claim:

This claim poses several diverse questions which can only be addressed retrospectively, using a combination of objective and subjective information. Although portions of the data are admittedly subjective, the reasoning used in preparing this opinion has been developed through thirty years of personal experience, professional training, and practice of veterinary medicine in the livestock industry, in companion animal medicine, and in the laboratory animal medicine specialty as an owner, herdsman, student, employee, and assistant to practicing veterinarians, summer internships, instructor, and now as an environmental specialist dealing with the effects of the environment on animals of all species. Although the relative weight of the data used in the Final Determination may be subject to differences of opinion, this recommendation is submitted as an impartial and unbiased statement, based on my best judgment of the evidence presented.

1. The symptomatic response by the dog after the ovariohysterectomy.
I believe the interpretation of Mrs Strang in regard to the post operative symptomatic response by the dog to its demise, is professionally incorrect. The post operative sequence of clinical signs shown by the dog in this case may be explained as follows:

Gastrointestinal irritation is an infrequent post operative complication of intestinal handling and manipulation in canines, but it can occur and may lead to intussusception, especially in young dogs. Foreign bodies, such as sponges, which are left in the abdominal cavity, can also cause aseptic gastrointestinal inflammation and irritation, which may also lead to intussusception. The intussusception, in this case, could have been caused by either of the above factors, or a combination of both. On the other hand, the sponge in the abdomen may have been coincidental and the intussusception unrelated to the sponge. This latter point cannot be proven, and is subject to dispute.

Incomplete obstruction from intussusception results in chronic vomiting and bloody diarrhea with abdominal pain, depression, dehydration, dyspnea, loss of appetite, and gradual weight loss. These signs are consistent with the post operative symptomatic response by the dog in this case.

29 NOV 1979

As telescoping of the intestine gradually increases, eventual complete obstruction occurs with more acute signs related to rupture of the small intestine, followed soon by death due to endotoxic shock and peritonitis when surgical intervention is not initiated early.

The fact that the exploratory laparotomy had to be accomplished is also an infrequent but occasionally necessary procedure following an ovariohysterectomy when the original surgery is complicated by body conformation, i.e., an animal that is deep from back to lower abdominal wall, and also when excessive fat fills the abdominal cavity. Occasionally, bleeding from an improperly ligated vessel does occur, and a second surgical procedure is required to correct the problem.

2. The concern regarding sterile surgical technique. The concern of Mrs Strang concerning the use of sterile technique is appreciated; however, Dr Rog addresses this area adequately in his statement. A lay person may lack sufficient knowledge and experience to evaluate sterile techniques. Autoclaving 4 x 4 sponges within a surgical pack is an accepted and recommended practice.

3. Dr Rog's surgical techniques in general. Insufficient information is available to evaluate Dr Rog's surgical techniques. There is nothing in the presented testimony that leads me to believe that Dr Rog's techniques were inappropriate with the exception of leaving the 4 x 4 sponge in the abdomen. Ideal technique includes the counting of sponges as they are removed from the surgical pack, and again counting them after use and before closing the abdomen.

4. The post operative treatment of other veterinarians concerned with this case. It is surprising that the civilian veterinarians did not do more extensive workups on the dog in light of the chronic history presented to them. Apparently, radiographs were not taken by any of these civilian veterinarians. Radiographs may not have revealed the sponge if it were not radiopaque labeled, however, they were certainly indicated and may well have revealed the intussusception in time to have surgically corrected it and saved the dog's life.

5. The specific elements of the claimant's opinion set forth in Mrs Strang's letter, and those of Dr Rog in his letter. The claimant's specific opinions concerning the course of events leading to the dog's death are probably incorrect. There is no evidence that there was an abdominal infection prior to rupture of the intestine. There was, however, no paracentesis or culture of abdominal fluid performed to confirm the presence or absence of infection in the abdomen. It is possible that an irritation peritonitis caused by the sponge led to the dog's death in shock following the rupture of the intestine. However, in all fairness to Dr Rog, and in defense of his professional abilities, this dog did not die as a direct result of a sponge being left in its abdominal cavity. This dog died due to the failure of five separate veterinarians to correctly diagnose a not-too-common post surgical complication.

6. The reasonableness of the charges in this case. The charges for property damage by claimant do not appear excessive. The purchase price of the animal is within an acceptable range for registered German Shepherds, and the estimated cost of raising the animal is reasonable. None of the veterinary bills presented appear to be unreasonable.

The \$200.00 figure appears twice in the claimant's total amount, apparently to cover the cost of the dog in question, as well as to buy a replacement animal. I question if it is necessary to pay for both.

I suggest that a copy of Dr Rog's Surgery Release be obtained for the record. It was apparently signed by Mr (Lt) Strang, and states no guarantee is made concerning the outcome of the surgery. This in itself does not, however, release any one from prosecution for negligent acts.

I also suggest that you look into the legal aspects of the MWR fund which is paying for this claim, rather than appropriated funds since the veterinary care of privately owned animals of military personnel come under the MWR program.

It was an unfortunate occurrence for all concerned. The death of the dog may have been directly or indirectly caused by the sponge left negligently in the abdominal cavity. The practice of counting items removed from surgical trays would help to prevent such future occurrences. Although every surgical operation carries a degree of risk to the life of the patient, every effort should be expended to minimize that risk. Prudent sympathy is due to Mrs Strang as it is recognized that pets are important family members in many homes, and their loss can be a disheartening experience.

I recommend this claim be honored with the exception noted in paragraph 6 above for what I consider to be double payment for the animal. Also, I recommend that you look into the legal aspects of the MWR fund involvement in payment of this claim.

I have included three literature references (Atch 1, 2, 3) for your information and use concerning the medical problem known as intussusception.

If you have questions concerning this Opinion, please call the undersigned at AUTOVON 240-3667.

Charles E. Thalken

CHARLES E. THALKEN, Lieutenant Colonel, USAF, VC
Chief, Environmental Assessment Branch

3 Atch

1. Ralph D. Reymond
2. George P. Wilson et al
3. David W. Wolfe

Footnote -

We were asked to evaluate this claim for validity and to pass judgment on the dollar amounts claimed.

- This claim had not been fully documented nor had the formal suit been filed.

- For your information, however, the amount of the proposed claim was: property damage, \$623.14; personal injury, \$500.00; for a claim total of \$1,123.14.

Appendix I

**Opinion Summaries - Claims Pertaining to Domestic Animals,
Fowl, Fish and Wildlife**

CLAIMS PERTAINING TO
DOMESTIC ANIMALS, FOWL, FISH AND WILDLIFE
(AFR 163-13)

I. Chickens (Aircraft Noise)

A. Claim of Gerald Lee, Montello NV, for decreased egg production in White Leghorn hens.

1. Claimant alleged that jets flew over his chicken coops causing chickens to become flighty because of broken eardrums and fear. He alleged that this resulted in loss of egg production, hampering his business and livelihood.

2. Amount of claim: \$60,000.00

B. Cause:

1. Type and Date: Mr Lee cites seven incidents of unidentified low flying aircraft occurring on 14 and 15 March 1979.

2. Aircraft Involved: Tentatively identified as belonging to the Air National Guard out of Hill AFB UT.

C. Findings: There was no documentation of Utah ANG aircraft flying closer than three miles to Montello or lower than 3000 feet on the indicated dates. Investigation revealed that most of Mr Lee's hens were three years old or older. Furthermore, the diet given the flock was nutritionally inadequate for the maintenance of egg production. The poor production record of Mr Gerald Lee's laying flock is expected, and totally explainable by age, environmental factors, and nutritional inadequacy. This poor production record would have existed with or without low-level aircraft overflights.

D. Disposition:

1. Professional Opinion: The USAF cannot be held accountable for the poor production record of Mr Lee's flock. The claim of Mr Gerald Lee should be disallowed in its entirety.

2. Amount Paid: \$1946.00

II. Dog (Other)

A. Claim of Lou Ann Strong, Sherman TX, for death of her one year old German Shepperd dog.

1. Claimant alleged that the dog's death was caused by negligence on the part of the base veterinarian in performance of an ovariohysterectomy and an exploratory laporatomy. Mrs Strong alleged that nonsterile surgical technique resulted in peritonitis and subsequent lack of appetite, and that the latter resulted in bloody diarrhea, anemia, and intussusception ultimately causing death of her dog. Mrs Strong further claimed personal pain and suffering due to loss of her dog.

2. Amount of Claim: \$623.14 Property Damage
\$500.00 Personal Injury

\$1123.14

B. Pertinent Facts: On 11 April 1979, a one year old female german shephard presented for elective ovariohysterectomy. The surgery was routine. Later that day, the dog was observed walking around seeping drops of blood from the incision. This seepage appeared heavy enough to indicate possible abdominal hemorrhage. With the owner's permission, an exploratory laporotomy was performed thru the previous surgical wound. No active bleeders were found but evidence of previous hemorrhage was present. About 50-100 cc's of blood was removed from the the abdominal cavity using 4 x 4 sponges and the incision closed. Two days post-op, the dog presented with lack of appetite, vomiting and bloody diarrhea. Five days post-op, the dog again presented with these same signs plus dehydration. Treatment included IV 5% Dextrose, corticosteroids and oral antibiotics. The patient was referred to a civilian veterinarian for X-rays and further surgery if indicated. During the next 16 days, the patient was seen by four different civilian veterinarians. No abdominal palpations or X-rays were performed during that time, despite the chronic history of gastrointestinal signs. The only treatment provided was conservative symptomatic therapy for a suspected low grade peritonitis. The patient died 21 days post-op. Necropsy revealed the cause of death was a ruptured intussusception with severe peritonitis and shock. A sponge was also found in the abdominal cavity.

C. Findings: Investigation of the facts revealed that the claimant's specific opinions concerning the course of events leading to the dog's death are probably incorrect. There was no evidence that there was an abdominal infection prior to rupture of the intestine. It is possible that an irritation peritonitis caused by the sponge led to the intussusception, and subsequent death in shock following rupture of the intestine. However, in all fairness to the base veterinarian, and in defense of his professional abilities, the patient did not die as a direct result of a sponge being left in its abdominal cavity. The dog died due to the failure of five separate veterinarians to correctly diagnose a not-too-common post-surgical complication.

D. Disposition:

1. Professional Opinion: It was an unfortunate occurrence for all concerned. The death of the dog may have been directly or indirectly caused by the sponge left negligently in the abdominal cavity. The claim and the charges appear to be reasonable. Payment recommended.
2. Amount paid: \$142.85

III. Cattle (Aircraft Noise)

A. Claim of Alton Williamson, Menard TX, for damage to fence and death of a weanling heifer.

1. Claimant alleged that a low-flying aircraft caused his herd of 25 newly-weaned calves to spook and stampede into a fence, damaging the fence and killing one heifer.

2. Amount of Claim: \$440.00

B. Cause:

1. Type and Date: Aircraft noise generated from a low-flying aircraft over claimant's cattle pens on 12 September 1978.

2. Aircraft Involved: Bergstrom AFB RF-4C reconnaissance aircraft on a low-level training flight.

C. Findings: The claimant witnessed the overflight but did not actually witness the death of the calf. The calf was discovered four hours later. A civilian veterinarian from Menard TX, inspected the calf subsequent to the incident and opined that the dead calf had struck its head on an iron pipe fence brace with great force, breaking its neck. He also verified the claimed value of the dead calf as being accurate. An Air Force veterinarian investigated the claim the next day. His report acknowledged the cause of death and recommended approval of the claim in the amount of \$440.00, which represented the present market value of the calf, plus repair cost of the fence, plus the civilian veterinarian's visitation fee.

D. Disposition:

1. Amount Paid: \$440.00

IV. Swine (Sonic Boom)

A. Claim of Mary Groendyke, Delano TN, for the death of one sow, four days after the alleged incident, and the death of one calf, a week after the alleged incident. In addition, claimant is asking replacement cost for feed, veterinary expenses, inconvenience, and for 59 feeder pigs, ten gilt hogs, and one boar, which are now allegedly unfit for breeding.

1. Claimant alleged that sonic boom from a low-flying jet aircraft caused the death of one sow and one calf. In addition, claimant alleged that the remainder of the herd aborted and were rendered hyperexcitable and unfit for breeding, as supported by an opinion written by a local veterinarian. That opinion is as follows: "It is my opinion, based on clinical examination and medical evaluation, that the damages reported above are directly due to the military jet breaking the sound barrier in the close proximity of Mary Groendyke's home and farm. It is quite possible that these animals, individually and on a herd basis, have suffered accident neurosis resulting in a psychic and permanent mental disorder which would render them unfit for future breeding purposes."

2. Amount of Claim: \$8000.00

B. Cause:

1. Type and Date: Claimant alleged that a sonic boom occurred over her property on 18 December 1979.

2. Aircraft Involved: Probably an F-4 from the 70th TFS, Moody AFB GA. However, the USAF sonic boom repository has no record of activity in the area on that date.

C. Findings: Investigation, revealed that the sow died from pyometritis resulting from a retained fetus. Four sows had abnormal clinical signs including anorexia, cachexia, paresis, pyometritis and abortion (some of these abortions occurred as late as four months following the alleged incident). Furthermore, the calf that died was exhibiting unusual nervous signs. There is no reason to believe that the alleged damages to Mary Groendyke's animals are the direct result of a sonic boom. In fact, pigs are the least reactive species to this stimulus. The clinical signs reported were inconsistent with what would be expected in swine and cattle exposed to sonic booms. It seemed probable that the reported signs in these animals were caused by an undiagnosed herd health problem. In fact, the combination of nervous and reproductive signs in the swine, along with the nervous signs and death of the calf, were most consistent with and not unlike the signs sometimes seen in pseudorabies (which was endemic in that area of Tennessee). The examining veterinarian's medical evaluation of "abnormal irritability, hypernervousness and excitability" would be an extremely unusual medical diagnosis to make in any farm animal due to the highly subjective nature of such an observation. Any given animal may certainly be irritable, nervous or excitable compared to others of

its species, but to say that animal is abnormally so, is impossible for anyone other than a frequent handler or observer of that animal. In conclusion, accident neurosis resulting in a psychic and permanent mental disorder, which would render an animal unfit for future breeding purposes, is not a recognizable syndrome in swine. (Footnote: Since the initial investigation of this claim, these pigs were sold to another breeder and are being used successfully in a profitable hog breeding operation with none of the reported psychotic or neurotic behavior).

D. Disposition:

1. Claim was denied. Claimant subsequently sued in Federal Court as a companion case to the case of Betty Davis vs USA (\$2,000.00 for damages to structure and personal injury). In the face of expert testimony by the USAF, claimants settled out-of-court.

2. Amount Paid: \$1600 in the case of Groendyke vs USA; \$24,700 in the case of Davis vs USA.

V. Turkeys (Aircraft Noise)

A. Claims of Joe and Mildred Jurgensmeyer, and James and Barbara Huhmann, Lipton MO for the death of 22,497 30-pound tom turkeys.

1. Claimants alleged that low-flying jet aircraft caused large numbers of their market-weight turkeys to stampede, pile up, and suffocate.

2. Amount of Claims: \$271,299.00

B. Cause:

1. Type and Date: Aircraft noise generated by RF-4C aircraft flying over claimants' property at an estimated speed of 420-480 knots and altitude of 150-200 feet during the period of 25-28 June and 1 July 1980.

2. Aircraft Involved: Minnesota ANG RF-4C Phantom IIs from the 148th Tactical Reconnaissance Group, Duluth International Airport MN 55811.

C. Findings: The turkey farms in question are located approximately two miles west of the centerline of a low-level military training route designated IR-517. On 25, 26 and 27 June 1980, approximately 30-36 sorties were flown on this route by the aircraft referenced in B.2. According to government records, the planes flew at speeds of 420-480 knots and at altitudes as low as 500 feet which is the minimum altitude restriction on route IR-517. Ambient temperatures during the incidents ranged from 93-106°F, while relative humidity ranged from 76-100%. The turkeys ran against the barn walls and feed trays, where they piled up, which resulted in large scale deaths caused by suffocation and physical trauma. Some turkeys died immediately and other turkeys died within a few days due to the physical stress, compounded by the excess heat and humidity. This claim was investigated, approved and paid under the National Guard Claims Act, 31 U.S.C. 715.

D. Disposition:

Amount Paid: \$256,966.16

VI. Cattle (Aircraft Noise)

A. Claim of David L. Cuba, Fullerton NE, for damage to cattle and fences.

1. Claimant alleged that USAF aircraft flew over his feedlot causing his feeder cattle to become frightened and stampede through the fence. He alleged that this incident resulted in one dead calf, one permanently injured calf, and a damaged fence. He also alleged that the remaining 53 head of feeder calves experienced 15% weight loss for being off feed for one week following the incident.

2. Amount of Claim: \$5738.62

B. Cause:

1. Type and Date: Aircraft noise generated from low-flying aircraft over claimant's property on 1 July 1980.

2. Aircraft Involved: B-52s belonging to the 3902nd SAC Wing at Offutt AFB NE.

C. Findings: Investigation revealed that Mr Cuba did suffer losses as a result of USAF aircraft flying low over his property. It was recommended that Mr Cuba be paid in full for the loss of one calf, damages to his fence, and veterinary cost. It was recommended that 50% salvage value be paid for the injured calf rather than full value as claimed. Investigation also revealed that 6.5% weight loss for being off feed for one week was more realistic than the 15% shrinkage claimed.

D. Disposition:

1. Amount Paid: \$3670.73

VII. Cattle (Aircraft Noise)

A. Claim of Max Werthein, Ft Sumner NM, for damage to cattle and fences

1. Claimant alleged that on two separate occasions, low-flying aircraft flew over his corral and frightened a group of new calves causing them to break down part of the corral. He alleged that one calf died as a result of the first incident and two died as a result of the second incident.

2. Amount of Claim: \$2190.40

B. Cause:

1. Type and Date: Aircraft noise generated from low flying jet aircraft over claimant's property on 6 Oct and 20 Oct 1979.

2. Aircraft Involved: Unidentified camouflaged jets. Claimant's ranch is on the midline of a designated high speed/low altitude military training route.

C. Findings: Investigation revealed that low-level aircraft flights over the claimant's ranch were not abnormal, and his cattle usually displayed little reaction to the stimulus. The calves involved in this claim, however, were new calves and unused to the sight and sound of low flying jets. Veterinary examination revealed that one calf died of heat exhaustion 3-4 hours after the alleged incident. The other two calves died within 24 hours from head and neck injuries. Several other calves were crippled in the incident but not claimed.

D. Disposition

1. Professional Opinion: The injuries that were claimed are consistent with the case presented and the claimant should be compensated for the loss of the three head of cattle at a fair market price.

2. Amount Paid: \$1751.65

VIII. Cattle (Missile Explosion)

A. Claim of Lyle Lathem, Clinton AR, for loss of a dairy cow.

1. Claimant alleged that hydrazine and nitrogen tetroxide gas from an exploding missile killed one of his dairy cows.

2. Amount of Claim: \$637.50

B. Cause:

1. Type and Date: Mr Lathem claims his cow died on 16 Oct 1980 following the 21 Sept 1980 missile explosion.

2. Missile Involved: A Titan II missile silo at Damascus AR.

C. Findings: On necropsy, the lungs and trachea, which would have had to be the primary route of absorption of toxic gases, were free of any gross pathology. The state diagnostic laboratory listed this cow's probable cause of death as bacterial sepsis. A heavy bacterial culture of Beta streptococcus was recovered from the brain of this animal.

D. Disposition:

Claim was denied.

IX. Cattle (Collapsed Tower)

A. Claim of Ernest Thornton, Boonville NY, for the loss of three dairy cows.

1. Claimant alleged that three dairy cows died as the result of puncture wounds caused by debris from a collapsed government radar tower.

2. Amount of Claim: \$18,000

B. Pertinent Facts: The tower support material located in the pasture involved included metal cables with "U" bolts attached, cylindrical ceramic electrical insulators, and metal anchors consisting of a metal block mounted atop a metal rod set in cement. The pasture was very large, partially wooded, with several streams and marshy areas. Several items were noted in the pasture with the potential for causing injuries to cattle including scrub cherry trees, piles of stone and loose fractured slate, broken glass, tin cans, and rolls of old barbed wire.

C. Findings: Mr Thornton's veterinarian stated that the incidence of foot and udder puncture injuries in this herd is similar to that found in other herds he attends in the area. Furthermore, the foot injuries treated were razor clean cuts of the type expected from a sharp piece of glass or tin.

D. Disposition:

1. Claim was denied. The evidence did not support the contention that the tower support material was the cause of the injuries to Mr Thornton's cows. Natural material present in the pasture had a higher probability of inflicting injuries of the type described in this claim.

X. Chickens (Helicopter Noise)

A. Claim of Johnny R. Krause, Loch Lomond CA, for loss of chickens and egg production.

1. Claimant alleged that U.S. government helicopters, flying low over his chicken houses, startled the chickens. He alleged that many chickens died during the next 12 days, and that egg production was greatly reduced in the remainder of the flock.

2. Amount of Claim: \$32,615.71

B. Cause:

1. Type and Date: Mr Krause cites two separate incidents of low-level helicopter overflights, 30 Jan and 21 Aug 1980.

2. Aircraft Involved: A USAF Jolly Green helicopter from Travis AFB CA in the Jan 80 incident, and a USAR UH1H helicopter from Hamilton AFB CA in the Aug 80 incident.

C. Findings: In the case against the USAF, the FAA radar report shows that the USAF helicopter involved never flew lower than 1200 feet AGL or closer than 2 1/2 miles lateral distance. In the case against the USAR, a helicopter overflight could not be definitely denied. Nonetheless, investigation revealed that Mr Krause ran a very poorly managed egg laying operation. The hens were maintained in outdoor pens with inadequate feeder and waterer space and poor sanitation. No artificial lighting, cull procedures, or forced moulting was used. Furthermore, the hens were maintained in the laying flock for three years which is two years past the usual profitable point.

D. Disposition:

1. Professional Opinion: It was the opinion of the consulting veterinarian, that Mr Krause would experience a net loss every year, with or without helicopter overflights. This opinion was consistent with Mr Krause's actual records. It was recommended that this claim be denied.

2. Status: Claim was denied. Mr Krause appealed. The case was heard by a three member arbitration panel in San Francisco CA on 16 Apr 82. The U.S. Attorney offered a \$2500 out-of-court settlement. Mr Krause refused that settlement and also refused binding arbitration. The arbitration panel denied the claim against the USAF for failure to show cause. In the case against the USAR, the panel awarded Mr Krause \$2500. Mr Krause refused that decision and filed for a trial de novo. The case is still in litigation.

XI. Cattle (Aircraft Noise)

A. Claim of Donald N. Robertson and Sidney V. Christensen, Coon Rapids IA, for death and injury to cattle and damage to fences and cropland.

1. Claimants alleged that low-flying aircraft on a training flight caused their feeder cattle to stampede through corral fences. This resulted in death of one steer, disappearance of another, injury and loss of revenue on 60 steers, and damage to fences and surrounding cropland.

2. Amount of Claim: \$31,168.95

B. Cause:

1. Type and Date: Aircraft noise generated from low-flying aircraft over claimant's property during the period of 30 Jun-31 Dec 80.

2. Aircraft Involved: Strategic Air Command B-52 aircraft, from 3902nd Wing at Offutt AFB NE, on low-level training flights.

C. Findings: A representative for a local land and cattle company witnessed the incidents and confirmed the aircraft identity. He also witnessed the damage and losses claimed. Investigation revealed that the economic loss claimed was both plausible and probable. The only points in the claim worthy of disputing were certain costs such as fence damage, crop damage, and unused feed carry-over. Conversely, other costs, such as labor and calf weight-gain, had been figured conservatively. A settlement was recommended based on recomputation of these costs.

D. Disposition:

1. Amount Paid: \$17,772.57

XII. Mink (Aircraft Noise)

A. Claim of James R. Alexander, Duluth MN, for the loss of mink kits.

1. Claimant alleged that low-flying aircraft approaching the Duluth International Airport excited his female mink during whelping season. He alleged that this caused them to ignore their offspring and not nurse them, resulting in the death of the kits.

2. Amount of Claim: \$33,834.91

B. Cause:

1. Type and Date: Aircraft noise generated from low-flying aircraft over claimant's property on seven occasions from 3-8 May 1980.

2. Aircraft Involved: RF-4C Phantom Aircraft from the 148th Tactical Reconnaissance Group, Minnesota Air National Guard, at the Duluth International Airport.

C. Findings: Mr Alexander's property is within five miles of the Duluth IAP and, therefore, all traffic within that airspace is controlled by the local FAA facility. Any aircraft in that airspace would have been at least 1500 feet AGL IAW local air traffic procedures. Furthermore, Mr Alexander's property is located more than two miles from Duluth IAP and is not aligned with the final approach course of any runway. RF-4C flights on the dates in question would not have been lower or louder than the normal every day flight operations conducted at Duluth IAP throughout the year. Investigation revealed that many mink ranchers in the area were experiencing similar losses attributable to unseasonably high environmental temperatures during the whelping season. Finally, there is overwhelming documentation that aircraft noise does not cause the reaction in mink that was described by the claimant.

D. Disposition:

Claim Denied.

